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THE FRENCH VERB: A DIACHRONIC ANALYSIS

BY

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The undersigned certify that they have read, and
recommend to the Faculty of Graduate Studies for acceptance, a
thesis entitled "The French Verb: A Diachronic Analysis" submitted
by Neera Gandotra in partial fulfilment of the requirements for
the degree of Master of Arts.

ABSTRACT

The phonological rule components of Classical Latin to Old French have been analysed and compared with special reference to their verb systems. The analysis of Old French has been compared with that of Modern French as discussed by Sanford Schane (French Phonology and Morphology, 1968). A diachronic investigation of the three stages reveals that the change between Latin and Old French is primarily re-construction i.e. change in underlying representations, whereas change between Old French to Modern French is primary change - i.e. change in the phonological verb component.

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Linguistic change, in generative theory, is viewed as grammar change. In this paper we have investigated the changes in the verb system from Latin to Modern French, as represented in the person, tense and aspect markers. We have compared parts of the phonological rule components of synchronic grammars of Classical Latin, Old French and Modern French. An analysis of Modern French exists in Schane's French Phonology and Morphology (1968), and we have adhered to his model as closely as possible in our analysis of Classical Latin and Old French, in order to make comparison possible. We have some reservations, however, about certain of Schane's procedures. For example, we feel that his principle of keeping the lexicon as simple as possible sometimes results, not only in the formulation of ad hoc phonological rules, but in extremely abstract underlying representations.

There is no agreement among generative linguists as to the proper limitations on the degree of abstractness of underlying re-presentations. Since a generative grammar is supposed to be a de-scription of linguistic competence, which we have no sure means of assessing, the question of to what extent underlying representations and phonological rules reflect "linguistic reality", has not yet been resolved. In the present analysis, we have tried to avoid constructing underlying abstract forms which are nowhere realized in the surface representation. For example, Schane, in Modern French, derives all /ü/'s from an underlying |u| (by a general vowel fronting rule which converts back vowels to front rounded vowels), although he presents no alternations to support his argument. On the other hand, in Old French, we posit an underlying |u| in the vocalic system, precisely because no ü/u alternations

were found. We have preferred to sacrifice lexical economy in order to keep our underlying abstract forms as close as possible to the surface representations, and to favour general and natural rules over ad hoc rules. A rule is usually considered to be natural if it describes processes commonly observed in natural languages, (e.g. assimilation, disimilation, etc.) and if it affects natural classes. For example, a rule (i) $p \rightarrow b$, is more natural than a rule (ii) $p \rightarrow a$, because it refers to only one feature change,[1] and a rule affecting $|p\ t\ k|$ is more natural than one affecting $|p\ r\ y|$.

Although the existence of morphologically conditioned rules is attested, they tend to be lost or generalized in the course of time, because they do not describe persistent phonological processes. When we encounter a restricted number of forms which behave similarly, it is difficult to decide whether to formulate a morphologically conditioned phonological rule, or whether to mark the forms in the lexicon. In general, if the rule applies to more than one form, or to a morphological class of lexical items, we have opted for the rule, but the choice is an arbitrary one.

Chapter I consists of an analysis of the regular verb forms of Classical Latin. The passive voice, gerundives and the imperative have not been discussed. The choice of Classical Latin, instead of some other dialect, was made for two reasons. First, the data for Classical Latin is readily available, and second, there is no evidence of drastic differences between the verb system of Classical Latin and the spoken Latin, which was probably the source of Modern French, until well after the Classical period. Such alternative forms, as are attested for Classical and pre-Classical times, are noted in the text

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1. See Halle "Phonology in Generative Grammar" in The Structure of Language by Fodor & Katz (1964), P. 334.

where they seem relevant to later developments.

Chapter II deals with the Old French vocalic and verb systems. In this analysis especially, we have tried to examine how far Schane's rules for Modern French can account for Old French data as well. The data are based mainly on the evidence in Donald McCulloch's thesis: A Morphological Study of the Verb in Old French (1959), which deals with forms found in twelfth century Romances.

We must emphasize that the phonological rules formulated, both for Latin and Old French, are only a portion of the total phonologies of these languages. Those rules which have no effect on verbal affixes (e.g. certain stem vowel alternations in Old French) have not been discussed unless they are needed to account for the specific verb under consideration.

Part I of Chapter III summarizes Schane's analysis of the verb system of Modern French. In Part II, we proceed to examine the kinds of changes that have occurred, as reflected in the synchronic grammars of Latin, Old French and Modern French -- changes in the phonological rule component: primary change; and changes in the underlying re-presentations: restructuring -- and how these changes can be accounted for in the current generative model as set forth by Robert King in his Historical Linguistics and Generative Grammar, (1969).

Some consideration has also been given to the ordering of rules in a synchronic grammar, with reference to Chafe's hypothesis on depth ordering (Chafe 1968:115).

It should be noted that the following notational system is used in the text:

~   above a vowel indicates nasalization.

'   before a vowel indicates that the vowel is stressed.

–   above a vowel indicates that the vowel is long.

| | enclose underlying representation.

/ /   enclose derived or phonemic representation.

[ ]   enclose phonetic representation.

Standard IPA notation is used for French consonants and vowels.

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CLASSICAL LATIN

1.0 PRESENT INDICATIVE

1.0.1 First Conjugation

The six forms of the present indicative of regular first con-
jugation verbs in Classical Latin may be illustrated by amāre[1], 'to love'.

(1)

	Singular	Plural
First person	amō	amāmus
Second person	amās	amātis
Third person	amat	amant

From these forms it is possible to set up the verb stem $|am|$ +
$|\bar{a}|$, consisting of the root $|am|$, and the thematic vowel for the first
conjugation, $|\bar{a}|$. This vowel, however, does not appear phonetically in
the first person singular form amō. This can be accounted for by Rule
(2). The underlying representation is $|\ am + \bar{a} + \bar{o}\ |$.

(2) (Rule (2)[2]) $a \rightarrow \phi /\ \underline{\qquad}\ \bar{o}$

The correct phonetic form is derived as in (3).

(3) $am + \bar{a} + \bar{o}$

  $am\qquad + \bar{o}$ (Rule (2))

   $/am\bar{o}/$

Thus the forms of (1) consist of the verb root, the theme vowel
and the person suffixes. $|-\bar{o}|\ |-s|, |-t|, |-mus|, |-tis|, |-nt|$.

These suffixes would be supplied by a lexical insertion Rule (4).

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1.   The vowels that are not marked for length are short.

2a. The /ā/ will first be shortened by the vowel shortening Rule (5)
     (see page 3). $V \rightarrow [-long]/\ \underline{\qquad}\ V.$

 b. Rule (2) will be revised and generalized when further data is intro-
     duced. (Page 4).

(4)   (i) $\begin{bmatrix} +AF \\ -PL \\ +1P \\ -3P \end{bmatrix} \rightarrow$ $\underline{\bar{o}}$

(ii) $\begin{bmatrix} +AF \\ +PL \\ +1P \\ -3P \end{bmatrix} \rightarrow$ $\underline{mus}$

(iii) $\begin{bmatrix} +AF \\ -PL \\ -1P \\ -3P \end{bmatrix} \rightarrow$ $\underline{s}$

(iv) $\begin{bmatrix} +AF \\ +PL \\ -1P \\ -3P \end{bmatrix} \rightarrow$ $\underline{tis}$

(v) $\begin{bmatrix} +AF \\ -PL \\ -1P \\ +3P \end{bmatrix} \rightarrow$ $\underline{t}$

(vi) $\begin{bmatrix} +AF \\ +PL \\ -1P \\ +3P \end{bmatrix} \rightarrow$ $\underline{nt}$

The thematic vowel has been postulated as long $|\bar{a}|$. However, it is not long in the third person forms: <u>amat</u> <u>amant</u>. According to Foley (1965: 59).

> "The alternations in the length of the thematic
> vowel can be accounted for by noticing that a long
> vowel is shortened when followed by a stop at the end
> of a word, or by two stops anywhere, the term 'stop'
> being taken to include the nasal stops 'm' and 'n'."

There is also a general rule in Latin which shortens any vowel when it is followed by another vowel.[3] All this information can be incorporated into one Rule (5).

(5)

$$V \rightarrow [-\text{long}] \Big/ \underline{\quad\quad} \begin{cases} [V] \\ [-\text{cont}]\# \\ [-\text{cont}] \quad [-\text{cont}] \end{cases}$$
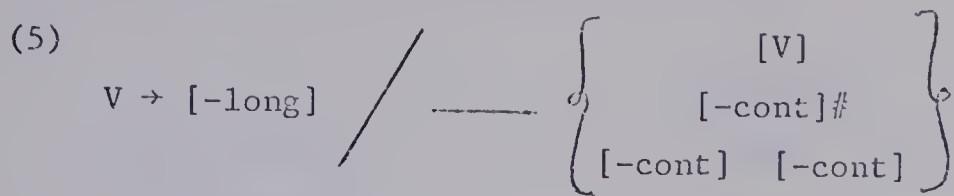
A derivation of <u>amant</u> illustrates the above rule.

(6) # am + ā + nt #

am + a + nt

/amant/

1.0.2 Second Conjugation

The present indicative of the regular second conjugation forms is as in monere. (7) 'to advise, warn'

(7)

	Singular	Plural
First person	moneō	monēmus
Second person	monēs	monētis
Third person	monet	monent

Here the verb root is |mon|, and the thematic vowel |e|. Otherwise it is exactly like the first conjugation, except that the thematic vowel is not deleted before |o|.

---

3. In adherence to the standard analysis of the Classical Latin vowel system we shall set up a vocalic system consisting of two sets (short and long) of five underlying vowels and three dipthongs:

ī   ū   ' ĭ   ŭ

ē   ō   ĕ   ŏ

ā   ă

ae   au   oe

1.0.3 Third Conjugation

The present indicative of regular third conjugation type verbs is illustrated in (8) with regere, 'to rule'.

(8)

	Singular	Plural
First person	regō	regimus
Second person	regis	regitis
Third person	regit	regunt

The root is apparently |reg|.[4] The thematic vowel is a short |i| but it does not occur in regō and regunt.[5] We already have a rule which deletes /a/ before /ō/ (Rule 2). We can extend this to include /i/:

Rule 2 (Revised)

$$\text{/a/ and /i/} \to \phi \ / \ \underline{\quad\quad} \ \bar{o}\#$$
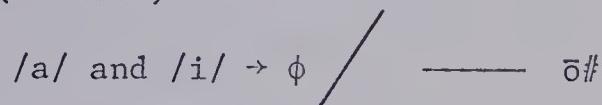
We would now need a rule which converts |i| to /u/ in the third person plural:

$$i \to u \ / \ \underline{\quad\quad} \ nt\#$$

Alternatively we could posit |unt| as the third person plural marker and write a more general rule for /i/ deletion:

$$(9) \quad \text{/i/} \to \phi \ / \ \underline{\quad\quad} \ V$$

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4. The postulation of 'reg' [reg] as the verb root in preference to 'rec' [rek] (cf. regō, rēctus) can be justified on the grounds that if we chose the latter, it would not be possible to account for the long 'ē' in rēctus. According to Lachmann's Law:

$$[V] \to [\text{long}] \ / \ \underline{\quad\quad} \ \underset{vce}{C} \quad\quad C$$

If |rek| were the stem the /ē/ would not be lengthened in [rektus], but if it were |reg| |regtus| → /regtus/ (Lachmann's Law) and /rēgtus/ → /rektus/ by a later rule that accounts for the assimmilation in voicing of a voiced consonant to a following voiceless consonant.

5. An alternative analysis is to posit |o| as the thematic vowel for

This solution would require another rule to delete the |u| in forms like <u>amant</u>, <u>monent</u>:

$$u \rightarrow \phi \Big/ \left\{ \begin{matrix} \bar{a} \\ \bar{e} \end{matrix} \right\} \underline{\hspace{2cm}} nt\#$$

Further data reveals the occurrence of /int/ as an ending in third person plural forms: <u>amaverint</u> (Perfect Subjunctive) <u>monuerint</u> (Future perfect Indicative).

So we would need a rule which does exactly opposite to the /i/ deletion rule, i.e. it deletes /u/ when preceded by /i/.

If, however, we insert the /u/ epenthetically, by a rule:

$$(10) \qquad \phi \rightarrow u \begin{bmatrix} v \\ +high \end{bmatrix} \Big/ \underline{\hspace{2cm}} nt$$

and then apply the /i/ $\rightarrow \phi \Big/ \underline{\hspace{2cm}}$ V rule, we would get the correct forms for the <u>regō</u> paradigm:

> <u>Sample Derivation:</u>
>
> ```
> #  |reg + i + nt|  #
>    reg + i + unt          (epenthesis)
>    reg +      unt
>    /regunt/
> ```

Rule (10) does not apply to the first and second conjugation forms because no high vowel precedes, but it does account for <u>capiunt</u> and <u>audiunt</u>. (See below).

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third conjugation verbs and introduce the |i| epenthetically by a rule:

$$\phi \rightarrow i \qquad C \underline{\hspace{1.5cm}} +C$$

Further data, however, shows that the epenthesis rule generates all kinds of incorrect forms in the perfect tense. e.g. it is not possible to have |reg + s| $\rightarrow$ rēks because we would get *regis. Also in the pluperfect subjunctive we would get forms like *amāvisisem.

(11)

	Singular	Plural
First person	capiŏ	capimus
Second person	capis	capitis
Third person	capit	capiunt

The /i/ does not delete in these forms however, so the /i/ deletion rule must be restricted morphologically to the rego̅ paradigm.

It must be admitted that the structural environment in which /u/ epenthesis occurs gives rule (10) a distinctly ad hoc flavour, but the alternative analysis, that is to posit unt as the third person marker, is more complex, and just as ad hoc, if not more so. Note that a rule for epenthetic /u/ before nasals is needed to account for some forms of esse, e.g. /sum/, /sumus/. (See Foley, 1965:61).

If underlying |u| is posited in the third person plural marker, the /u/ deletion rule would have to be restricted morphologically to exclude capiunt and audiunt. Also the /i/ deletion rule would still have to be conditioned so that it applies only to the rego̅ paradigm.

Of course, one may prefer to mark the thematic vowel /i/ in the lexicon for its absence in rego̅ and regunt, but that would still leave us with the problem of /ant/ /ent/ /unt/ /int/ as third person plural markers. Taking all these factors into consideration Rule (10) and a morphologically conditioned /i/ deletion rule, appear to produce the correct forms in the simplest way.

1.0.4 Fourth Conjugation

The fourth conjugation present indicative of audi̅re, 'to hear' is similar to that of capere in all respects, except for the thematic vowel, which is long |i̅|, preceded by the root |aud| —— No new rules are needed to account for surface forms.

1.1 IMPERFECT INDICATIVE

1.1.1 First Conjugation

The imperfect indicative forms are quite regular in all the Latin conjugations.

The occurring forms of the first conjugation are given below, together with their underlying representations.

(12)   <u>Singular</u>

First person	amābam		am + ā + bā + m	
Second person	amabas		am + ā + bā + s	
Third person	amabat		am + ā + bā + t	

<u>Plural</u>

First person	amābāmus		am + ā + bā + mus	
Second person	amābātis		am + ā + bā + tis	
Third person	amābant		am + ā + bā + nt	

The forms consist of |am| (root), |ā| (thematic vowel), |bā| (the imperfect marker) and the person endings. The first person singular marker is, however, |m| and not |o| as in the present indicative. Since the two phonemes /m/ and /o/ have very few phonetic features in common there is no reason to derive one from the other.[6] Furthermore, there is no way to predict which one is going to occur. The alternation is restricted to the verbs and seems to occur arbitrarily in the various paradigms. So it will be necessary to mark |m| and |o| in the lexicon for the tenses in which they occur.

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6. Foley (personal communication) has devised a method of deriving both endings from one underlying abstract representation. I cannot cite the base form because I have not been able to consult his work.

The first person singular marker for all conjugations in the imperfect indicative is |m|.

The following derivations show that we need no new rules to account for the forms in (12).

(13)

(a).　　# am + ā + bā + m　#

　　　　　am + a + ba + m　　　　　　(Rule 5)

　　　　　/amābam/　amābam

(b)　　# am + ā + bā + nt #

　　　　　am + a + ba + nt　　　　　　(Rule 5)

　　　　　/amābant/　amābant

1.1.2　Second Conjugation

The second conjugation forms of the imperfect indicative follow the same pattern as the first conjugation forms. The thematic vowel is |ē| instead of |ā|.

(14)

	Singular	Plural
First person	monēbam	monēbamus
Second person	monēbas	monēbātis
Third person	monēbat	monēbant

No additional rules are necessary.

1.1.3　Third Conjugation

The forms of the imperfect indicative of the third conjugation are illustrated in (15):

(15)

	Singular	Plural
First person	regēbam	regēbāmus
Second person	regēbās	regēbātis
Third person	regēbat	regēbant

We have already posited the root of the verb as |reg|, and the

thematic vowel as $|\mathrm{i}|$. The long $|\mathrm{e}|$ raises a problem. It also occurs in the <u>capiebam</u> and <u>audiebam</u> paradigms. One possible solution is to introduce it epenthetically.

(16)

$$\phi \rightarrow \bar{e} \Big/ \begin{bmatrix} V \\ + \text{ high} \end{bmatrix} \text{———} \quad b\bar{a}$$
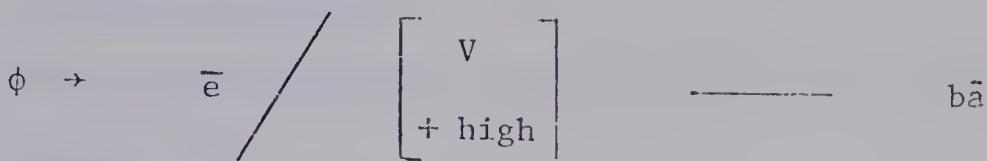
We already have a Rule (10) which deletes /i/ before another vowel in the <u>'regō</u> paradigm. If this is applied after Rule (16) we get the correct result. Since Rule (10) does not apply to <u>audio</u> and <u>capio</u> forms, the thematic vowels in these latter will remain.

For example:

(17)

(a) $|\text{reg} + \text{i} + \text{b}\bar{\text{a}} + \text{s}|\#$

  reg + i + $\bar{e}$ + bā + s   (Rule 16)

  reg + $\bar{e}$ + ba + s   (Rule 10)

  /regēbās/   <u>'regēbās</u>

(b) $|\text{cap} + \text{i} + \text{b}\bar{\text{a}} + \text{s}|\#$

  cap + i + $\bar{e}$ + bā + s

  /capiëbas/ <u>capiëbas</u>

Rule (16), however, is very <u>ad hoc</u>. It seems better to set up two forms for the imperfect marker in the lexicon: <u>bā</u> and <u>ēba</u>, and mark these for the conjugation types in which they occur. This, of course, results in complicating the lexicon. The issue in question here is whether it is better to keep the lexical items as regular as possible, and write rules to account for any irregularities, no matter how <u>ad hoc</u> these rules may seem — or whether to sacrifice lexical simplicity, and write only rules that seem to have some basis in linguistic reality.[7]

Rule (16) is difficult to justify because it cannot be

7. "Linguistic reality" and "natural" rules have been briefly discussed in the introduction.

independently motivated. It is not needed to account for any other data. Therefore it is preferable to posit two allomorphs in the lexicon for the imperfect indicative suffix: bā and ēba.

1.1.4. Fourth Conjugation

The imperfect indicative forms of the fourth conjugation are as in audiebam (18).

(18)

	Singular	Plural
First person	audiēbam	audiēbāmus
Second person	audiēbās	audiēbātis
Third person	audiēbat	audiēbant

Here the thematic vowel |i| is long in the underlying representation but is shortened by Rule (5).

1.2 Future Indicative

1.2.1 First Conjugation

The regular forms of the future indicative of the first conjugation are as in amābō (19).

(19)

	Singular	Plural
First person	amābō	amābimus
Second person	amābis	amābitis
Third person	amābit	amābunt

The forms consist of |ām| the verb root, |ā| the thematic vowel, |bi| the future marker, plus the person endings. (The first person singular marker here is |ō|.) If we extend the environment of Rule (10) so that it will apply to the /i/ of the future marker as well as to the rego paradigm, we need no new rules to account for the forms in (19).

Sample Derivation:

(20)

> ∦ am + ā + bi + nt ∦
>
>   am + ā + bi + unt   (Rule 9)
>
>   am + ā + b + unt   (Rule 10)
>
> /amābunt/   <u>amābunt</u>

1.2.2. Second Conjugation

The future indicative forms of the second conjugation differ from the first only in their thematic vowel, |ē|.

(21)

	Singular	Plural
First person	monēbō	monēbimus
Second person	monēbis	monēbitis
Third person	monēbit	monēbunt

1.2.3. Third Conjugation

The third conjugation future indicative forms are as in <u>regam</u> (22).

(22)

	Singular	Plural
First person	regam	regēmus
Second person	regēs	regētis
Third person	reget	regent

It is apparent that these forms are quite different from those of the first and second conjugations. The future marker here appears to be /e/, and we will establish it as such. It also occurs in the 'capiam' and 'audiam' paradigms. However, the first person singular of all these forms has /a/ instead of |ē| as the future marker. This irregularity must be noted in the lexicon, as must be the fact that the first person singular marker is <u>m</u> for the third and fourth conjugation future forms.

2.   Thus a derivation for <u>regent</u> shows that the existing rules are adequate to produce the correct form.

(23)

$$\# \ reg + i + \bar{e} + nt \ \#$$
$$reg + i + e + nt \qquad (Rule \ 5)$$
$$reg \qquad + e + nt \qquad (Rule \ 10)$$
$$/regent/ \qquad \underline{regent}$$

The '<u>capiam</u>' type verbs are exactly the same, except that the thematic vowel $|\bar{\imath}|$ is not deleted.

1.2.4. Fourth Conjugation

Again the only difference between these and third conjugation forms is that the thematic vowel is long $|i|$ in the underlying representation. This is shortened by Rule (5).

(24)

	Singular	Plural
First person	audiam	audiēmus
Second person	audiēs	audiētis
Third person	audiet	audient

1.3. LIST OF RULES

Following are the rules needed for the non-perfect indicative tenses. (The page and number as they appear in the text are given in parenthesis.)

1. $V \rightarrow [-long] \Big/ \underline{\quad} \dfrac{[V]}{[-cont]\#}$
       $[-cont][-cont]$ (Page (3))

2. $a \rightarrow \phi \Big/ \underline{\quad\quad} o$ (Page (1))

3.

$$\phi \rightarrow \begin{bmatrix} V \\ +high \\ +round \end{bmatrix} \Bigg/ \begin{bmatrix} V \\ +high \end{bmatrix} \underline{\hspace{2cm}} [+nasal][-cont]$$
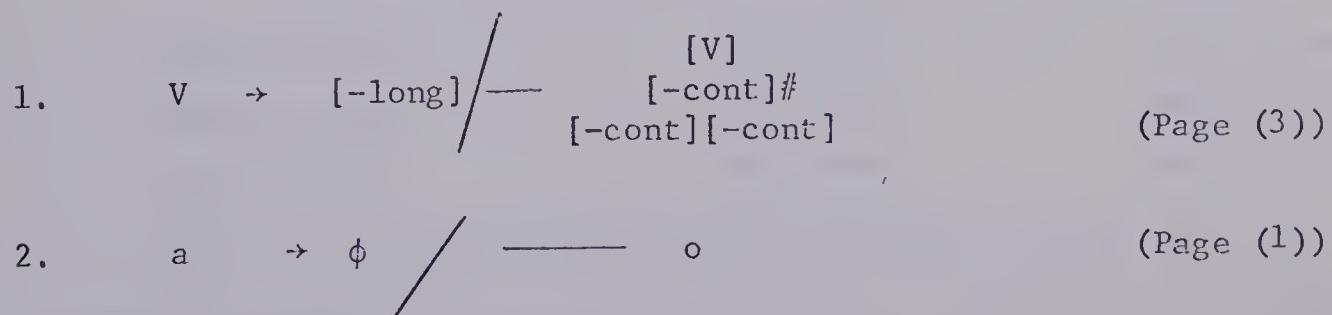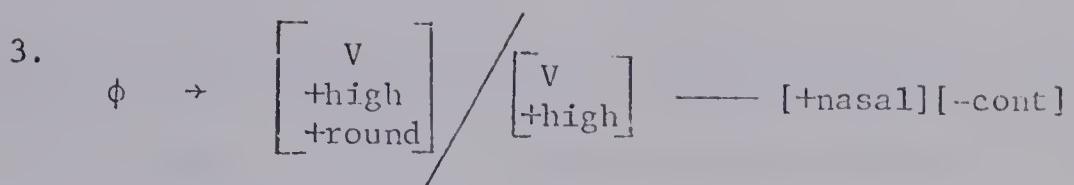
i.e. insert /u/ between a high vowel and /nt/   (Page (5)).

4.

$$\begin{bmatrix} V \\ +high \\ +front \end{bmatrix} \rightarrow \phi \Bigg/ \underline{\hspace{2cm}} V$$

Condition: This rule applies only to regō type
verbs and to future marker bi.

i.e. /i/ deletes before another vowel in rēgo and
in bi type verbs.   (Page (4))

Rule ordering will be dealt with at the end of this chapter.
For the moment, it is sufficient to note that Rule (1) must precede
Rule (2), and Rule (3) must precede Rule (4).

In trying to analyse the forms of the 'perfectum' in Classical
Latin it is convenient to examine the apparently most complex forms
first.   Therein the various component forms are more easily identifiable
than in the more contracted forms like the perfect indicative.

1.4. PLUPERFECT SUBJUNCTIVE

1.4.1. First Conjugation

The pluperfect subjunctive forms of regular Classical Latin verbs
of the first conjugation are as in amāvissem (25).

(25)

	Singular	Plural
First person	amāvissem	amāvissemus
Second person	amāvissēs	amāvissétis
Third person	amāvisset	amāvissent

|am| is the verb root, and |ā| the thematic vowel.   The |v|
presents a problem. It occurs in all perfect indicative and subjunctive
forms of the first, second and fourth conjugation.   It did not, however,

always occur regularly in Latin. Forms without the |v| were more commonly used, and the |v| forms were more apparent in literary language:

> "La regularité parfaite des paradigmes de grammariens:
>
> amav - ⎫
> audiv - ⎬ -ī, -istī, -eris, -isse, etc.
> vid -   ⎭
>
> n'a jamais été realisée, non seulement dans la langue parlée, mais pas même dans celle, plus on moins stylisée, des écrivains; et sous la regularité relative de la langue littéraire, on peut entrevoir la persistance de l'ancienne diversité: le peuple a toujours fléchi sapuī, sapisti et audī, audistī;" (A. Burger 189:134).

Although in the third person singular of verbs such as audiō the |v| is needed to distinguish present indicative audit from perfect audīvit, it served no morphological function in most forms. In Vulgar Latin the shift of accent between vowels in hiatus resulted in the loss of the |v|. e.g. Classical Latin battuere became battere in Vulgar Latin. (Elcock 1960:40) Loss of intervocalic /v/ in the /-avi/ and /-ivi/ type verbs resulted in /-ai/ and /-ii/ in Vulgar Latin. The fact that the |v| did not generally survive is further indication that it was some kind of stem formative in most verbs, lacking morphological significance.

We may assume that the |s| in the third conjugation forms like rēgo, rēxī, rēksī, is also such a stem formative. To quote Burger (1896:134) again

> "...puis on voit apparaître, en roman commun, un nouveau type dīxī, *dīcistī, parallèle à sapuī, sapistī,"

and again (Burger 1896:103)

> "le vieux latin possède un grand nombre de formes courtes du type dīxtī, dīxī, chez Terence, ce sont les formes normales."

It should also be noted that there is no evidence of either a |v| or |s| in the capiō, cepī paradigm. Taking all the above information

into consideration we shall assign no morphological value to the segments $|v|$ and $|s|$. They will be marked in the lexicon as [+perfect] and for the conjugations in which they occur.

In traditional analysis the pluperfect subjunctive has been considered to be a compound form of $|am\bar{a}v|$ + the imperfect subjunctive of esse. This was based on the fact that the passive forms of the pluperfect subjunctive consist of the past participle of the verb + essem, essēs, esset, essēmus, essētis, essent —— the imperfect subjunctive of esse, in fact. A generative analysis shows no evidence to contradict this hypothesis.

If we accept Foley's analysis of esse (Foley 1965:59), $|s|$ is the infinitive morpheme (which becomes /re/ by a rhotacism rule in verbs which have thematic vowels e.g. /amā + se/ →/amāre/; and the /e/ is introduced prothetically by a rule (Foley 1965:62).

(26)

$$\phi \rightarrow e \quad / \quad \# \quad \text{------} \quad C + C$$

i.e. insert an /e/ in word initial position before a consonant plus a morpheme boundary, followed by another consonant.

If we modify this rule so that it will also apply across the boundary between $|am\bar{a}v|$ and $|ssem|$, introducing an epenthetic /i/, most of the perfect forms can be accounted for. This, however, necessitates the introduction of a new kind of boundary within a word, which is represented by =. The "="[8] is a stem-boundary, like that between the stem of amāvissēmus and the rest of the morphological segments. e.g. $\#|am + \bar{a} + v = s + s\bar{e} + mus|\#$.

The introduction of this boundary is not merely an ad hoc device to account for an isolated phenomenon, restricted to the perfect tenses of

---

8. Chomsky and Halle (1968:94) introduced this notational device to account for some apparent exceptions to the assimilation rule in English phonology. Certain phonological rules which apply across a morpheme boundary ("+"), do not apply across a "=" boundary.

the verb system.[9] In Classical Latin we have the following rules for

the conversion of /u/ to /w/ (J.A. Creore, Personal and Communications).

(i) u → w / # ——— V   (vivo)

(ii) u → w / V ——— V   (avis)

(iii) u → w / VL ——— V   (cervo, volvo)

(iv) u → w $\begin{bmatrix} + \text{cons} \\ + \text{back} \end{bmatrix}$ ——— V (aqua, sanguis)

Apparent exceptions to these rules can be accounted for if we

posit a = boundary which modifies their application in certain contents.

e.g. convivo konvivo is a compound consisting of the preposition con

plus the verb vivo: |kon = uiu + ō|. On the first cycling, rules (i)

and (ii) convert |uiu + ō| to /vivō/. Contrast monui |mon + u = i|,

where the /u/, following /n/ is not subject to glide formation.

Similarly, acuarius [akuarius] from |aku = arius|, but aquarius

[akwarius] from |akua = aruis|. Rule (iv) does not apply before |=|.

Within the verb system, compare volvō [volvō] from |uolu + ō|,

perfect volvī volvī, |uolu = ī|, with volō, perfect voluī [voluī] from

|uol + u = ī|. In this last case, rule (10) cannot apply before |=|.

Note that rules (i) and (ii) are not affected by a following

|=|: amavi [amāvī] from |am + ā + u = ī|.

Thus the new rule for prothesis will look like this:

(27)

$$\phi \rightarrow \begin{bmatrix} e \\ i \end{bmatrix} \Bigg/ \begin{bmatrix} \# & \text{———} & s + C \\ = & \text{———} & s + \end{bmatrix}$$

and produce the correct phonetic output: [amāvisēmus].

The subjunctive marker is not apparent in the pluperfect subjunctive.

It would be appropriate then, to discuss here the various forms of the

9. This boundary is also needed in the stress rule for Modern French as
    formulated by Schane (1968:62). The same stress rule applied to Old
    French. (See Chapter II).

subjunctive morpheme. An analysis of the present subjunctive of _esse_, indicates that the subjunctive marker is $|\bar{\text{i}}|$.

The forms are as follows:

	Singular	Plural
First person	sim	sīmus
Second person	sīs	sītis
Third person	sit	sint

The verb root is $|s|$ and the person endings _m_, _s_, _t_, _mus_, _tis_, _nt_. Thus $|\bar{\text{i}}|$ must be the subjunctive morpheme.

In the imperfect subjunctive if we posit an underlying $|\bar{\text{i}}|$ in the base forms, e.g. $|s + se + \bar{\text{i}} + mus|$. we would need a rule (28)

(28)

$$e + \bar{\text{i}} \rightarrow \bar{e}$$

This is definitely a strange rule for Latin. There is historical evidence that eī → ī. (Bennett 1918:93,100) Also it seems only natural that the weaker (shorter) vowel be assimilated to the following /ī/, rather than the reverse. But if we posit $|\bar{e}|$ as the imperfect subjunctive marker in /amavissēmus/ a rule (29) would not only account for the $|e|$ assimilation, but also explain why the $|\bar{e}|$ is long.[10]

(29)

$$\begin{bmatrix} V \\ \alpha F \end{bmatrix} \begin{bmatrix} V \\ \alpha F \end{bmatrix} \rightarrow \begin{bmatrix} V \\ \alpha F \\ +long \end{bmatrix}^{[11]}$$

The subjunctive marker occurs as $|\bar{e}|$ in the _amare_ paradigm in the present and imperfect subjunctive, and as /ī/ in the perfect subjunctive. In the other conjugations it appears as $|\bar{a}|$ in the present,

---

10. The /e/ in $|se|$, the infinitive morpheme is short.

11. One problem with Rule (29) is that Latin has sequences of identical vowels. These occur only across morpheme boundaries, however, and do not survive into Romance. e.g. _tuus_, _suus_, etc.

|ē| in the imperfect, and |ī| in the perfect subjunctive. We propose
to posit the underlying forms as |ē| and |ī| for the perfect tenses and
account for all the forms of the subjunctive in the perfectum by means
of phonological rules. Other forms of the subjunctive will be discussed
later.

A derivation to illustrate the pluperfect subjunctive should be
sufficient for the first conjugation forms:

(30)   amāvissētis

The underlying representation consists of:

|am| root   + | ā   thematic vowel
+ |V| stem formative = |s| perfect marker
+ |se| infinitive marker + |ë| subjunctive marker
+ |tis   second person plural ending

#|am + ā + v = s + se + ē + tis|#
am + ā + v = i + s + sē + tis #   (Rule 27)
am + ā + v = i + s + sē + tis #   (Rule 29)
/amāvissetis/

1.4.2. Second Conjugation

The pluperfect subjunctive forms are as in (31):

(31)

	Singular	Plural
First person	monuissem	monuissemus
Second person	monuisses	monuissetis
Third person	monuisset	monuissent

The root is |mon|; the thematic vowel |e| is not present in the
surface form, so we need a rule to collapse e + u.

Rule (32)

e + u   →   ū   through the stages:

e + u >/o + u/ > /u + u/ > /u/

The $|\bar{e}|$ would be shortened by the vowel shortening rule, and an /eu/ cluster is rare in Latin. There is also historical evidence that it reduced to $|\bar{u}|$:

> "Eu appears in Latin in only a few words, and in these is of
> secondary origin. Primitive Latin $|eu|$ early became /ou/, whence
> /u/. The chief Latin words with /eu/ are: ceu, neu, seu, heu.
> The combination appears also in numerous proper names borrowed
> from the Greek, e.g. Europa, Teucer. In all these the sound was
> that of a genuine diphthong i.e. an e – sound quickly followed
> by a u – sound, both being uttered under one stress." (Bennett
> 1918:10)

It must be noted that in general the perfect stem formative appears as $|u|$ when preceded by a consonant and $|v|$ when preceded by a vowel, unless a = boundary intervenes.[12] There is reason to believe that there was only one phoneme: u which became [-syll] when preceded by a vowel or liquid. e.g. urvo, volvo.

Rule (33)

$$\begin{bmatrix} V \\ +\text{high} \\ +\text{front} \end{bmatrix} \rightarrow [-\text{syll}] \Big/ V \ (\text{liquid}) \underline{\quad} V$$
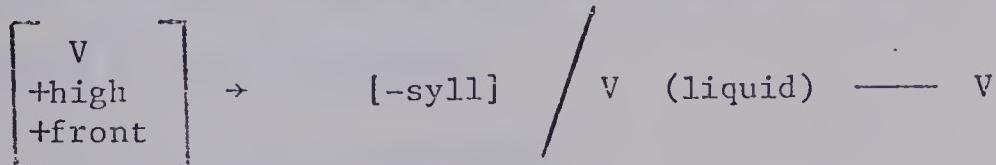
1.4.3. Third Conjugation

In the third conjugation perfect forms, the stem formative is $|s|$.
e.g.

(34)

	Singular	Plural
First person	rēxissem	rēxissēmus
Second person	rēxisses	rēxissētis
Third person	rēxisset	rēxissent

We have already posited $|reg|$ as the verb root, and the thematic vowel as $|\bar{i}|$ which deletes under very special morphological conditions. (Rule 4)[13]

---

12. (See above, Page 16).

13. See list of 'rules' L. 4, (See Page 28)

(4)

$$|i| \rightarrow \phi \ \Big/ \ \underline{\quad\quad} \ \text{V} \quad \text{(restricted to reg\=o paradigm and } \underline{bi}$$
$$\text{(future morpheme.))}$$
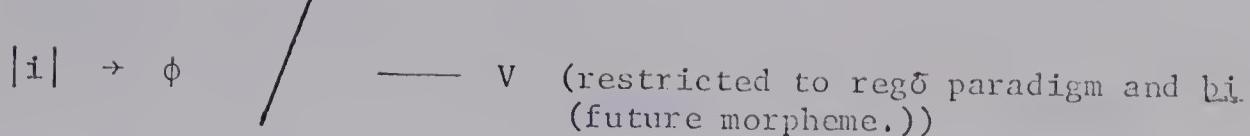
The rule as it stands will not permit a $|reg + s|$ underlying segment that we need to get the phonetic [rēks]. Again by using the "stem" boundary we can resolve the problem by rewriting Rule (10) as in (35).

(35)

$$i \rightarrow \phi \ \Big/ \ \begin{array}{c} \underline{\quad\quad} \ \text{V+} \\ \underline{\quad\quad} \ = \end{array}$$

Thus the [i] in <u>regis</u> would not be deleted: $|reg + i + s|$, but in the perfect $|reg + i + s = s|$ it would.[14]

The forms of <u>capere</u>, 'to take' require no additional rules. The vowel change in the verb root itself: <u>capiō</u>: <u>cēpissem</u>, does not concern us here. The one point worth noting is that there is no stem formative at all in evidence.

1.4.4. Fourth Conjugation

The pluperfect subjunctive forms of the fourth conjugation present no new problems. They consist of $|aud|$ the stem, $|\bar{\imath}|$ the thematic vowel, $|v|$ the stem formative, $|+i|$ (epenthetic) and the imperfect subjunctive of <u>esc̄ə</u>.

1.5. PERFECT SUBJUNCTIVE

1.5.1. First Conjugation

The regular forms of the first conjugation verbs in the perfect subjunctive are as in (37)

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14. An assimilation rule (36) and Lachmann's Law (Page 29) can account
for the form [reks] from $|reg + s|$.

Rule (36) $[+\text{construent}] \rightarrow [-\text{vce}] \ \Big/ \ \underline{\quad\quad} \ [-\text{vce}]$

(37)

	Singular	Plural
First person	amāverim	amāverīmus
Second person	amāverīs	amāverītis
Third person	amāverit	amāverint

The underlying forms consist of $|ama| + |V|$, the stem formative, and the present subjunctive of <u>esse</u>. It is necessary here to formalize the rhotacism rule by which $|s| \rightarrow /r/$ and the preceding vowel is lowered. This requires two steps. (38).

(38) (a) $|s| \rightarrow r \ \Big/ \ V_1 \underline{\quad\quad} V_2$

(b) $V_1 \rightarrow [-high] \underline{\quad\quad} /r/ \ V_2$

A derivation for <u>amāverint</u>:

(39)

$\#$ am $+ \bar{a} + v = s + \bar{i} + nt \ \#$

am $+ \bar{a} + v = \breve{i} + s + \bar{i} + nt$ (Rule 27)

am $+ \bar{a} + v = \breve{i} + s + \breve{i} + nt$ (Rule 5)

am $+ \bar{a} + v = e + r + \acute{i} + nt$ (Rule 38)

/amāverint/

All the other conjugations are formed on the same principle, and no additional rules are necessary.

1.6. FUTURE PERFECT INDICATIVE

1.6.1. First Conjugation:

The first conjugation regular verbs had the following forms (46) in the future perfect indicative.

(40)

	Singular	Plural
First person	amāverō	amāverimus
Second person	amāveris	amāveritis
Third person	amāverit	amāverint ,

These have traditionally been analysed as a compound form of |ama + v| + the future of _esse_, and this is confirmed by a generative analysis. According to Foley (1965:63), it is possible to set up abstract underlying forms for the future of _esse_. In their surface representation they are:

(41)

	Singular	Plural
First person	erō	erimus
Second person	eris	eritis
Third person	erit	erint

The base forms would consist of |s|, the root, plus |bi| the future marker and the person endings. Foley proposes a rule to delete the |b| after |s| so that rhotacism occurs. So, if we posit such a rule (which is also needed for the pluperfect indicative forms) it is possible to account for the data in (47).

(42)

$$b \rightarrow \phi \quad / \quad s+ \underline{\quad}$$

a derivation (49) demonstrates this:

(43)

erimus

|s + bi + mus|	
es + bi + mus	(Rule 27)
es + i + mus	(Rule 48)
er + i + mus	(Rule 38)
/erimus/	

Rule (35) accounts for the deletion of the /i/ before /o/, in the first person singular, but Rule (9) (u - epenthesis), does not apply to the third person plural which must be marked in the lexicon for its absence. Thus we get /-erint/ and not /-erunt/ in the third person plural.

No phonological rules are required to account for the compounding of the stem with the suffix. This is true of all the conjugations.

1.7. PLUPERFECT INDICATIVE

1.7.1. <u>First Conjugation</u>

The regular forms are as in (44):

(44)

	Singular	Plural
First person	amāveram	amāverāmus
Second person	amāveras	amāveratis
Third person	amāverat	amāverant

These are a compound of the stem plus the imperfect of <u>esse</u>.[15] The latter has been analysed by Foley.[16] No new rules are needed. The future perfect indicative is similar to the future indicative, except that the imperfect morpheme is /bā/.

A derivation is illustrative:

(45)

|am + ā + v = s + bā + mus|

  am + ā + v = is + bā + mus   (Rule 27)

  am + ā + v = is + ā + mus   (Rule 42)

  am + ā + v = er + ā + mus   (Rule 38)

  /amāverāmus/

---

15. The occurring forms are as follows:

	Singular	Plural
First person	eram	eramus
Second person	erās	eratis
Third person	erat	erant

16. A derivation illustrates how the forms of the imperfect indicative of <u>esse</u> are derived by Foley (1965:63)

  <u>erās</u>
  |s + bā + s|
  es + bā + s   (prothesis)
  es + ā + s   (/b/ deletion)
  er   ā + s   (rhotacism)
  /erās/

No additional rules are needed for the other conjugations.

1.8. PERFECT INDICATIVE

Some forms of the perfect indicative of Latin verbs in all conjugations are highly irregular as demonstrated in (46).

(46)

	Singular	Plural
First person	amāvī	amāvimus
Second person	amāvistī	amāvistis
Third person	amāvit	amāvērunt

The perfect forms in all conjugations consist of the verb root plus thematic vowel plus stem formative plus perfect marker plus person endings: $|\bar{i}|$, $|t\bar{i}|$, $|t|$, $|mus|$, $|tis|$, $|unt|$. The /i/ is inserted epenthetically before /s/ (perfect marker) (Rule 27). It is then deleted in the first person singular and plural and third person singular, and must be marked in the lexicon.

The third person plural ending /ērunt/ is irregular in that the epenthetic /i/ (which becomes /e/ through Rule (38) – rhotacism) is long. There are alternative forms with /erunt/, however. (e.g. dēlēvērunt: deleverunt.) (Burger 1928:112). Therefore we can assume that the length of the /e/ was not definitely established.

The markers for the first and second persons singular are peculiar to the perfect indicative, and they can be provided by a lexical insertion rule:

(47)

$$
(a) \begin{bmatrix} +AF \\ +PERFECT \\ +INDICATIVE \\ +1P \\ -3P \\ -PL \end{bmatrix} \rightarrow \underline{i}
$$

(b) $\begin{bmatrix} +AF \\ +PERFECT \\ +INDICATIVE \\ -1P \\ -3P \\ -PL \end{bmatrix}$ → $\underline{t\bar{i}}$
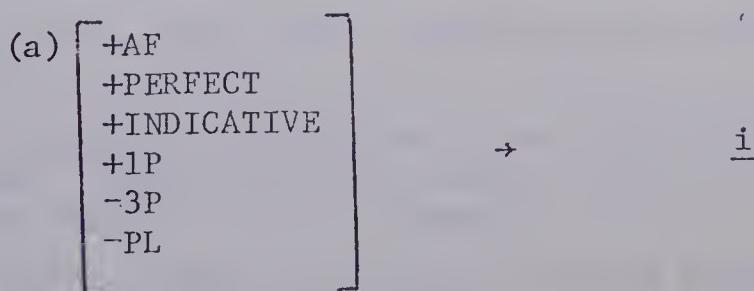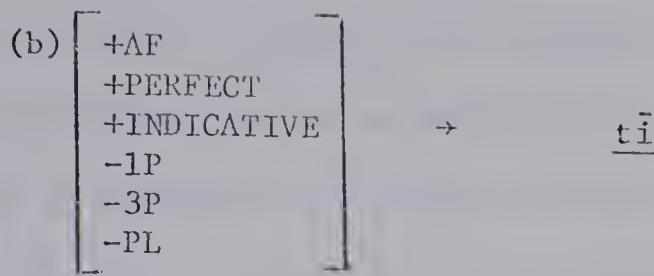
Sample Derivation:

<u>amāvērunt</u>

$\#$ |am + ā + v = s + nt| $\#$

am + ā + v = i + s + nt   (i - epenthesis)

am + ā + v = i + s + u + nt   (u - epenthesis)[17]

am + ā + v. = e + r + unt   (rhotacism)
/amāvērunt/

1.9. THE IMPERFECT SUBJUNCTIVE

1.9.1. <u>First Conjugation</u>

The regular forms are as in (48):

(48)

	Singular	Plural
First person	amārem	amārēmus
Second person	amārēs	amārētis
Third person	amāret	amārent

The underlying forms consist of |am + ā| + |a| + |ē| (subjunctive marker) plus person endings. The morphological value of the |s| is questionable. It could be a special marker for the imperfect subjunctive, and a part of the lexicon. Alternatively, we could posit the infinitive marker |se| in the underlying representation, and the |e| would combine with the subjunctive marker by the vowel reduction rule. There is no reason, however, for the imperfect subjunctive to contain the infinitive morpheme in its base form. Both solutions require lexical complication:

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17. u - epenthesis occurs here even though there is no preceding high vowel. Foley (1965:61) gives a rule to account for <u>sum</u>, <u>sumus</u>, <u>sunt</u>: s + [+nasal] → s + u [+nasal].

This rule would also account for the insertion of /u/ in the third person plural of the perfect.

either the infinitive morpheme is marked for its occurrence in the imperfect subjunctive; or an additional morpheme for the imperfect subjunctive is added. Although the latter alternative will probably "cost" more, we shall opt for $|s|$ as imperfect subjunctive marker, because we feel that there is no evidence for the presence of $|se|$ (infinitive marker) in the imperfect subjunctive.

Sample Derivation:

(49)

$$\#|am + \bar{a} + s + \bar{e} + m \#$$

am + a + r + $\bar{e}$ + m	(Rule 38)
am + $\bar{a}$ + r + e + m	(Rule 5)
/āmārem/	

This analysis accounts for the second and third conjugation forms, but the rhotacism Rule (38), Part (b) does not apply to the fourth conjugation forms, as V_1 is [+high] and remains so. Therefore it is necessary to impose a restriction (38b):

(38) Revised –

(a) $\quad s \;\rightarrow\; r \;/\; V_1 \;\underline{\quad\quad}\; V_2$

(b) $\quad \begin{bmatrix} V_1 \\ =long \end{bmatrix} \rightarrow \; [-high] \quad\quad \underline{\quad\quad}\; rV_2$
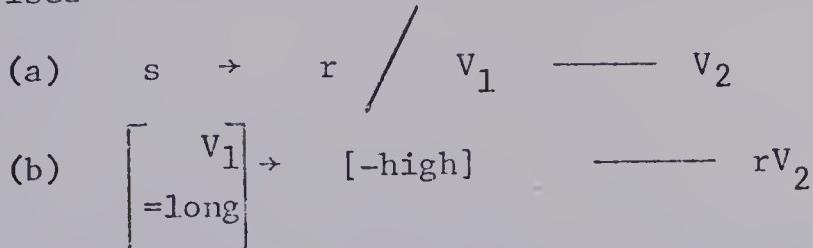
e.g. <u>corpus</u> : <u>corporis</u>

<u>regis</u> : <u>regerēs</u>

but <u>audīs</u> : <u>audīret</u>

1.10. PRESENT SUBJUNCTIVE

1.10.1. First Conjugation

As mentioned earlier (Page 19), the subjunctive marker in the first conjugation is $|\bar{e}|$, but $|\bar{a}|$ in all the other conjugations.

It is possible to account for the alternation by a phonological

rule.[18] It appears that when the thematic vowel is $|\bar{a}|$, the subjunctive marker in the present tense is $|\bar{e}|$, and when the thematic vowel is $|\bar{e}|$, $|\bar{i}|$ or $|\bar{i}|$, the subjunctive marker is $|\bar{a}|$. This can be formulated as:

Rule (50)

$$\begin{bmatrix} +AF \\ +SUBJUNCTIVE \\ +PRESENT \end{bmatrix} \rightarrow \begin{bmatrix} V \\ -high \\ \alpha front \\ -\alpha low \end{bmatrix} / \begin{bmatrix} V \\ -front \\ \alpha low \end{bmatrix} \underline{\quad\quad}$$
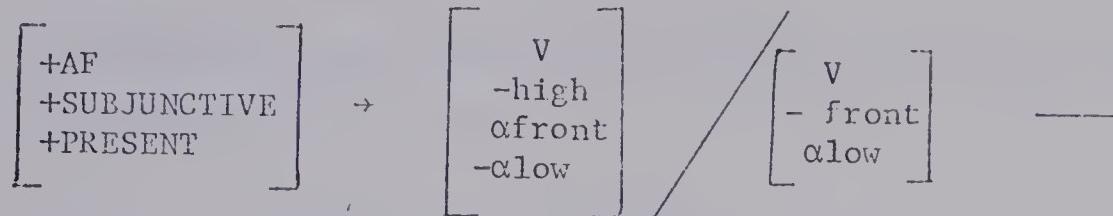
This is a lexical insertion rule which is phonologically conditioned.

The forms of the first conjugation may now be analysed as:

(51)

$|am + \bar{a} + \bar{e} + m$

$|am + \bar{a} + \bar{e} + s$

$|am + \bar{a} + \bar{e} + t$

$|am + \bar{a} + \bar{e} + mus$

$|am + \bar{a} + \bar{e} + tis$

$|am + \bar{a} + \bar{e} + nt$

We already have a Rule (2) which deletes /a/ before /$\bar{\phi}$/. If we extend this to (52)

(52)

$$a \rightarrow \phi / \underline{\quad\quad} V$$

we need no more rules to account for the above data (51).

The forms for all the other conjugations are easily accounted for. A derivation example makes this clear (53)

(53)

<u>regātis</u>

$|reg + i + \bar{a} + tis|\#$

$reg + \quad \bar{a} + tis \quad\quad$ (Rule 35)

/regātis/

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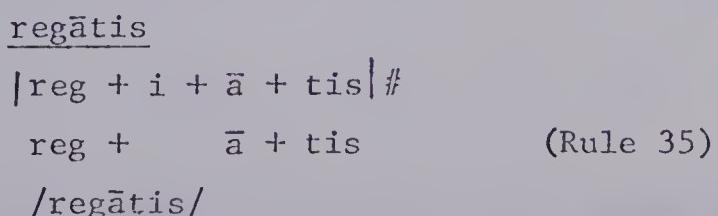
18. James Foley (personal communication).

$|aud + \bar{i} + \bar{a} + s| \#$

$aud + i + \bar{a} + s$ (Vowel shortening)

$/audi\bar{a}s/$

SUMMARY OF RULES

Following is a list of the rules required to account for the data presented in Chapter 1.[19]

L.1. $V \rightarrow$ $[-long]$ $\begin{array}{c} V \\ [-cont]\# \\ [-cont][-cont] \end{array}$ (Page 3)

L.2. $\begin{bmatrix} V \\ +low \end{bmatrix} \rightarrow \phi \;/\; \underline{\quad} \quad V$

      i.e. $a \rightarrow \phi \;/\; \underline{\quad} \quad V$ (Page 4)

L.3. $\phi \rightarrow \begin{bmatrix} V \\ +high \\ +round \end{bmatrix} \;/\; \begin{bmatrix} V \\ +high \end{bmatrix} \quad \underline{\quad} \quad [-nasal] \; [-cont]$ (Page 5)

L.4. $\begin{bmatrix} V \\ +high \\ +front \end{bmatrix} \rightarrow \phi \Big/ \left\{ \begin{array}{cc} \underline{\quad} & V + \\ \underline{\quad} & = \end{array} \right\}$

         Condition: Rule is restricted to _regō_ type verbs and to future morpheme _bi_.

                                                (Page 4)

L.5. $e + u \rightarrow u$ (Page 18)

L.6. $\begin{bmatrix} V \\ +high \\ -front \end{bmatrix} \rightarrow [=syll] \Big/ \quad V(L) \underline{\quad} V$

      i.e. $/u/ \rightarrow /w/$ after a vowel or vowel + liquid   (Page 19)

L.7. $[+obstruent] \rightarrow [-vce] \Big/ \underline{\quad} [-vce]$

      i.e.   a consonant becomes unvoiced before a voiceless consonant).   (Footnote 14)   (Page 20)

L.8. $\phi \rightarrow \left\{ \begin{array}{c} e \\ i \end{array} \right\} \Big/ \left\{ \begin{array}{ccc} \# & \underline{\quad} & /s/ & + c \\ = & \underline{\quad} & /s/ & + \end{array} \right\}$

      i.e.   insert /e/ before /s/ + consonant in initital position.   insert /i/ before /s/ preceded by = boundary

                                                (Page 15)

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19.   L = Latin.

L.9. b → ∅ / s+ _____

L.10. Rhotacism:

(a) $|s| \rightarrow /r/$ / V_1 _____ V_2

(b) $\begin{bmatrix} V \\ -\text{long} \end{bmatrix} \rightarrow [-\text{high}]$ / _____$/r/V_2$

i.e. an intervocalic $|s|$ becomes /r/ and lowers a preceding short vowel.

L.11. $\begin{bmatrix} V \\ \alpha F \end{bmatrix} \begin{bmatrix} V \\ \alpha F \end{bmatrix} \rightarrow \begin{bmatrix} V \\ \alpha F \\ +\text{long} \end{bmatrix}$

i.e. two identical vowels in sequence are reduced to one long vowel with the same feature.

L.12, [20] $\begin{bmatrix} +\text{AF} \\ +\text{SUBJUNCTIVE} \\ +\text{PRESENT} \end{bmatrix} \rightarrow \begin{bmatrix} V \\ =\text{high} \\ \alpha\text{front} \\ -\alpha\text{low} \\ +\text{long} \end{bmatrix}$ / $\begin{bmatrix} V \\ -\alpha\text{front} \\ \alpha\text{low} \end{bmatrix}$ _____

i.e. the present subjunctive morpheme is $|\bar{a}|$ when pre-
ceded by a non-low vowel; it is $|\bar{e}|$ when preceded
by a low vowel.

L.13. Lachmann's Law

$[v \rightarrow + \text{long}]$ / _____ $\begin{bmatrix} +\text{cons} \\ +\text{vce} \end{bmatrix}$ C

i.e. a vowel becomes long when followed by a voiced
consonant + consonant cluster.

The majority of these rules are general ones for Latin. Only
rules (3) and (4) need to be restricted to the verb system, and the
arguments in favour of these rules have already been presented in the
text.

_____

20. The reason this lexical insertion rule is listed with the phonological
rules, is because it is phonologically conditioned.

The first part of Rule (8), /e/ epenthesis, is also a general rule for Latin, but the /i/ epenthesis is probably restricted to the verb system.

The fact that most of the rules are motivated independently of the verb system is evidence in support of the validity of the analysis.

RULE ORDERING

Phonological rules in a synchronic grammar may be applied sequentially or simultaneously. We are able to tell by examining any pair of rules whether there is interference between them. This inter-ference may be additive, i.e. "the interfering rule adds to or expands the stock of instances upon which the interfered-with rule operates, or could operate", (Chafe 1968:122) or it may be subtractive, i.e. the interfering rule subtracts from or removes the instances upon which the interfered-with rule operates, or could operate. When either kind of interference is present, the rules must be sequentially ordered. To determine the order in which the rules should apply, we must have reference to their phonetic output. Interference, (whether additive or subtractive, may be appropriate or inappropriate. "Appropriate interference requires that the interfering rule be applied before the interfered-with rule. Inappropriate interference requires the reverse." (Chafe 1968:128)

If there is no interference the rules can be applied simultaneously. Simultaneous application precludes the possibility of one rule applying to the output of another. They both apply to the same underlying form.

To give a hypothetical example:

A language has two rules:

1. $c \rightarrow [-vce] / \underline{\quad\quad} \#$

    $a \rightarrow \varepsilon / [+stress]$

If we apply these simultaneously to an underlying form */b'ag/:

1 > 2		2 > 1		1 = 2	
/b'ag/		/b'ag/		/b'ag/	
/b'ak/	(1)	/b'ɛk/	(2)	↓	
/b'ɛk/	(2)	/b'ɛk/	(1)	/b'ɛk/	(1 + 2)

Synchronic grammars maximize simultaneous ordering, whereas historical ordering is predominantly sequential. Randomness means that there is not a unique ordering for some rules, but that the correct phonetic output will result from a variety of possible sequential, simultaneous orderings. (Chafe 1968:118).

In this analysis we shall follow Chafe's suggestions (Chafe 1968:128) and establish depth of ordering, defined in terms of the total number of stages which are present between an underlying form and its phonetic realization.

> "It is possible...to think of phonological rules as arranged in layers. The bottom layer can be thought to contain all those rules whose output is directly phonetic, whose output belongs to phonetic structure and need not be modified further by the action of other rules.   ... The next layer above contains all those rules whose output is removed from phonetic structure only by the bottom layer of rules. A succession of such layers can be imagined, with the top layer containing that rule or those rules which are separated from phonetic structure by the maximum number of intervening rules. There is thus a progression from maximum concreteness (in terms of most direct phonetic relevance) in the bottom layer to maximum abstractness (least direct phonetic relevance) in the top layer.
>
> "...this is precisely the organization of the rules which is achieved by the maxim: apply each rule at the latest possible point...The principle can be thought of as one which says to apply all rules as if they were directly prephonetic to the extent that this is possible, distributing rules above (or prior to) this level as such ordering turns out to be necessary." (Chafe 1968:122)

If we examine the rules for Latin in this light, we find that:

(a) Rule (9) must be applied after Rule (8) since (9) interferes

subtractively with (8)

(b) Rule (9) must precede Rule (10) because of subtractive interference.

(c) Rule (3) must precede Rule (4) because it causes additive interference with (4).

(d) Rule (1) interferes with Rules (2), (4), and (5) additively, and must precede them.

(e) Rule (13) must precede (7) because (7) subtracts from (13)'s environment.

Thus we can establish four levels of rule ordering —— the system has a depth of four. In adherence to Chafe's convention (Chafe 1968:122) the rules which are directly prephonetic will be marked as belonging to the first degree of depth (I).

Rule Depth	Rule Number	Must Precede Rules
IV	1	2, 4, 5
III	8	9
II	9	10
	13	7
	3	4
I	7	–
	2	–
	4	–
	5	–
	10	–
	11	–
	12	–
	6	–

CHAPTER II

OLD FRENCH

Schane, in his analysis of modern French, (Schane 1968:20) shows
how, in morphologically related forms "a set of alternating vowels is
derived from a single underlying vowel through the application of
phonological rules. These rules state the environments in which certain
underlying vowels are converted to other (derived) vowels." In most
cases of vowel alternation the conditioning factor is the relation of
a particular vowel to the tonic syllable. Schane sets up two sets of
underlying vowels, tense and lax, and "the location of the stress depends
on the tenseness feature of the underlying vowels as well as on the
presence or absence of various junctures, so that stress is placed on
the first vowel in a sequence such that no tense vowel or = juncture
follows." (Schane 1968:65)

In the Old French verb system there are many instances of vocalic
alternation within a particular paradigm. It is possible to adopt
Schane's stress rule by positing underlying lax and tense vowels for
Old French.

2.0 THE VOCALIC SYSTEM OF OLD FRENCH

2.0.1 Tense Vowels[1]

The following are examples of vowels that remain unchanged
whether in tonic or pre-tonic position.

---

1. For justification of the use of the feature "tense", see Schane,
   (1968: p.30,60ff.) It is convenient to distinguish non-alternating
   vowels from alternating vowels by the absence or presence of a single
   feature. This is simpler than positing the alternates individually
   in the lexicon.

		TONIC	PRETONIC
1.	$\|a\|$	plane	planer
		déclare	déclarons
2.	$\|o\|^2$	donent	donez
3.	$\|y\|^3$	dur	durons
4.	$\|i\|$	cite	citons
5.	$\|e\|$		$\|ə\|$
		mets	metons
6.	$\|ɛ\|$		$\|ə\|$
		apèle	apelons
		mène	menons

The last two examples 5, and 6, do exhibit an alternation:
$\|e\|$: /ə/ $\|ɛ\|$: /ə/, but this is predictable by a late phonetic rule.
"In the course of Early Old French /e/ counter tonic...free (from all
sources) was ordinarily reduced to /ĕ/, /ə/." (Pope 1934:107)

Schane has a rule for the conversion of pre-tonic $\|ɛ\|$ to /ə/
(Schane 1968:35) in Modern French. If we modify this rule to include
the pretonic conversion of $\|e\|$ to /ə/ as well, both cases of alternation
can be accounted for.

---

2. The exact phonetic quality of the /o/ at this time is difficult to
   determine. "In the course of the eleventh and twelfth centuries,
   /o/, already a high close sound in Gallo-Roman,...moved upwards in
   all positions to /u/, i.e. to the place left vacant by the palatali-
   zation of $\|u\|$. The graphy, when it was not etymological, was at first
   $\|u\|$ in Norman and Anglo-Norman MSS., $\|o\|$ elsewhere: the di-graph $\|ou\|$
   appears first in the late twelfth century.?

   The sound /o/ thus disappeared for a while out of the sound-system,
   but was brought in again in the thirteenth century and Middle French
   by the tendency to close lengthened /ɔ/." (Pope 1934:80)

3. " $\|u\|$ palatalized to /ü/...alike before oral and nasal consonants.
   The sound /u/ thus disappeared for a while out of the francien sound
   system but was brought in again by the raising of /o/ to /u/."
   (Pope 1934:80).

Rule for pre-tonic schwa conversion

$$
\begin{bmatrix}
- \text{ stress} \\
+ \text{ mid} \\
+ \text{ front}
\end{bmatrix}
\quad \text{segments become} \quad
\begin{bmatrix}
- \text{ tense} \\
- \text{ front} \\
- \text{ round}
\end{bmatrix}
$$

i.e. |ε| and |E| → /ə/[5] in pre-tonic position.

It is now possible to set up a system of seven underlying tense vowels with the following features in Old French.

	i	e	ε	a	)	o	y[u][4]
high	+	+	-	-	-	+	+
mid	-	+	+	-	+	+	-
front	+	+	+	-	-	-	+
round	-	-	-	-	+	+	-

It is more convenient to use these features rather than Schane's [high] and [low] because, as will be demonstrated below (p. 38) the glide insertion rules can be handled by one two-part rule.

2.0.2 Lax Vowels[6]

The following are examples of lax vowels in tonic and pre-tonic position.[7] In contrast to the tense vowels the lax vowels have different

---

4. Schane derives the fronted /ü/ from an underlying lax |u| by the application of a fronting rule, which also derives the other front rounded vowels from back vowels. The latter did not yet exist in Old French however, and there are no phonetic occurrences of /u/ either, therefore this system has no underlying |u|, only |o| and |y| (/u/).

5. Schwa has the same features as |a|, except that it is [+mid].

6. We shall follow Shane's method of distinguishing tense from lax vowels in the orthography. From here on tense vowels will be represented by upper case letters (I, E, A, etc.) and lax vowels by lower case letters (i, e, a, etc.)

7. Fouché (1967:38)

sets of alternating vowels, depending on stress. Most of them undergo
pre-tonic and post-tonic adjustment.

	PRETONIC	TONIC
1.	|a|	/ɛ/
	lavons	lef
	lavez	leves
	comparer	compere
2.	/ə/	/jɛ/
	crevons	crief
	crevez	crieves
	assegier	assieges
3.	/ə/	/oj/
	peser	poise
	bevons	boire
	devoir	doit
4.	/o/	/wɛ/
	ovrons	uevre
	ovrez	uevrent
	covrir	cuevre
5.	|o|.	/ow/
	plorons	ploure
	plorez	ploures
	plorer	plourent
	laborer	laboure
	esposer	espouse

1. |a| : /ɛ/

The underlying vowel is a lax |a| which becomes /ɛ/ when stressed.
This |a| , however, does not undergo pre-tonic adjustment. It belongs
to a special class of forms and must be marked as such in the lexicon.[8]

Rule (1)

$$\begin{bmatrix} V \text{ round} \\ - \text{ tense} \end{bmatrix} \rightarrow [+\text{front}] \quad / \quad \begin{bmatrix} \underline{} \\ + \text{ tonic} \end{bmatrix}^{[9]}$$

(|a| → /ɛ/ when stressed)

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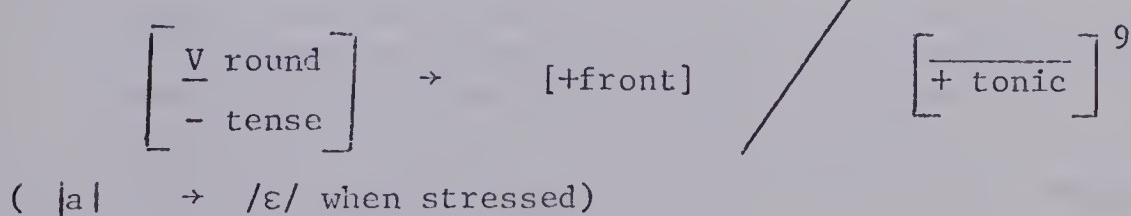
8. Schane (Chapter 2) classifies these forms as Type I — they do not
    undergo pre-tonic position. In Modern French all First Conjugation
    verbs are Type I.

9a. It is necessary to make a distinction between pre-tonic and post-tonic

2. /ə/ : /jɛ/

The underlying vowel is a lax |ɛ| which becomes /ə/ in pre-tonic position (rule for pre-tonic schwa conversion) and /jɛ/ in stressed position.

Rule for glide insertion:

2.

$$\phi \rightarrow \begin{bmatrix} - \text{ voc} \\ - \text{ cons} \\ - \text{ round} \end{bmatrix} \Bigg/ \underline{\hspace{2cm}} \begin{bmatrix} V \\ - \text{ round} \\ + \text{ tonic} \\ - \text{ high} \\ + \text{ mid} \end{bmatrix}$$
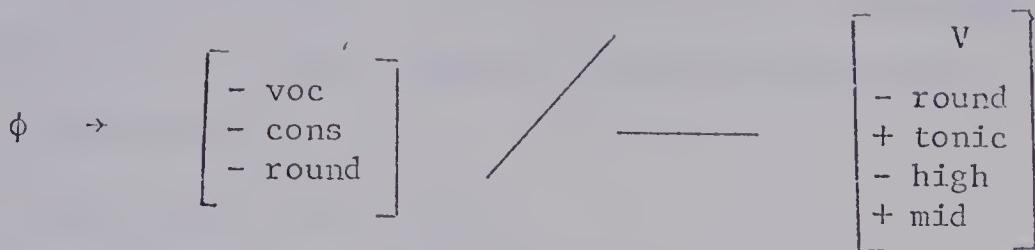
i.e. insert /j/ before |ɛ| when stressed.

3. /ə/ : /oj/

Although the pre-tonic vowel here is again schwa /ə/, the under-lying vowel cannot be |ɛ| since in stressed position it exhibits a different diphthong. Therefore, the underlying vowel must be something else. We know that tense |E| → /ə/ in pre-tonic position (rule for pre-tonic schwa conversion) as in /met:mətons/. In Modern French we have an example of an |e|:/oj/ alternation – esperer:espoir, where the |e| is Type I and does not undergo pre-tonic adjustment.[10] So, all things considered, it seems feasible to posit the underlying vowel as lax |e| for set 3 of the examples.

---

vowels since they undergo different alternations. Therefore [-stress] is discarded in favour of [+tonic] [+pre-tonic] [+post-tonic]. These terms are convenient abbreviations for specifying whether a segment occurs before or after a stressed syllable.

b. This rule assumes that stress has already been assigned.

10. |o| and |ɔ| could also be considered as possible sources for |oj|, but 1) /o/ and /ɔ/ do not alternate with /ə/ in pre-tonic position; 2) when stressed they alternate with /ou/ and /ue/ respectively. (see next page).

It is not possible to convert |e| to /oj/ in one simple step
as two segments are involved. There is historical evidence that /ə/
alternated with /ej/ in forms like esperer:espeir; peser:peise, and the
/ej/ → /oj/ in the eleventh and twelfth centuries. (Fouché, 1967:45)
Thus forms with both /ej/ and /oj/ must have been interchangeable during
the period of transition. e.g. espeire:espoire; peise:poise. So, because
two segments and a complex change are involved, the process is best
handled by two rules:

(1) |e| → /ej/ and (2) /ej/ →/oj/.

Rule (3) - diphtongization, or glide insertion

$$\phi \rightarrow \begin{bmatrix} - \text{voc} \\ - \text{cons} \\ - \text{round} \end{bmatrix} / \begin{bmatrix} V \\ + \text{high} \\ + \text{mid} \\ - \text{round} \\ + \text{tonic} \end{bmatrix} \_\_\_\_\_ \qquad (|e| \rightarrow /ej/)$$
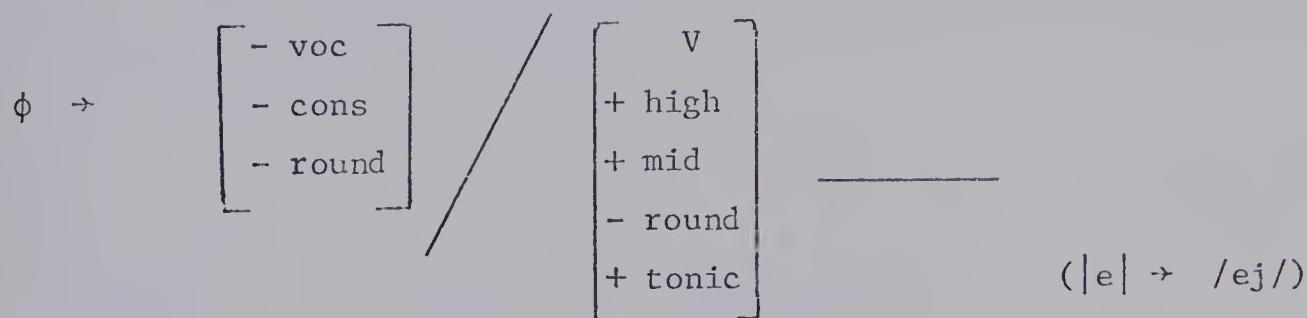
i.e. insert /j/ after stressed |e|.

Rules (2) and (3) are very similar. They both apply to [+ mid]
front tonic vowels. If the vowel is [= high] the /j/ precedes the vowel;
if the vowel is [+ high] the glide follows the vowel. This can be
expressed in one rule:

Rule (4)

$$\phi \rightarrow \begin{bmatrix} - \text{voc} \\ - \text{cons} \\ - \text{round} \end{bmatrix} / \left\{ \begin{array}{l} \text{(a)} \quad \_\_\_\_\_ \begin{bmatrix} V \\ - \text{high} \\ + \text{mid} \\ - \text{round} \\ + \text{tonic} \end{bmatrix} \\ \\ \text{(b)} \begin{bmatrix} V \\ + \text{high} \\ + \text{mid} \\ - \text{round} \\ + \text{tonic} \end{bmatrix} \_\_\_\_\_ \end{array} \right\}$$

Rule (5) /ej/ → /oj/

$$
\begin{bmatrix} V \\ + \text{ mid} \\ + \text{ tonic} \\ + \text{ high} \end{bmatrix} \rightarrow \begin{bmatrix} - \text{ front} \\ + \text{ round} \end{bmatrix}^{11} \Big/ \underline{\qquad\qquad} \begin{bmatrix} - \text{ voc} \\ - \text{ cons} \\ - \text{ round} \end{bmatrix}
$$
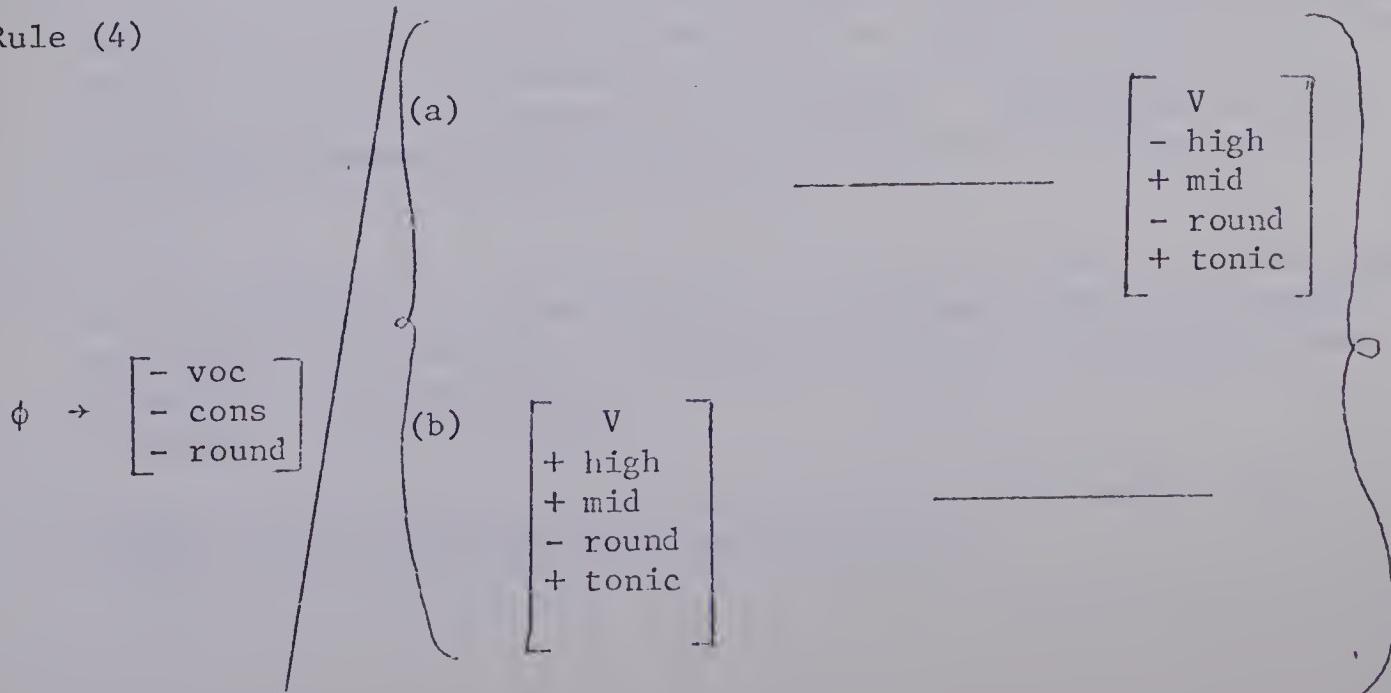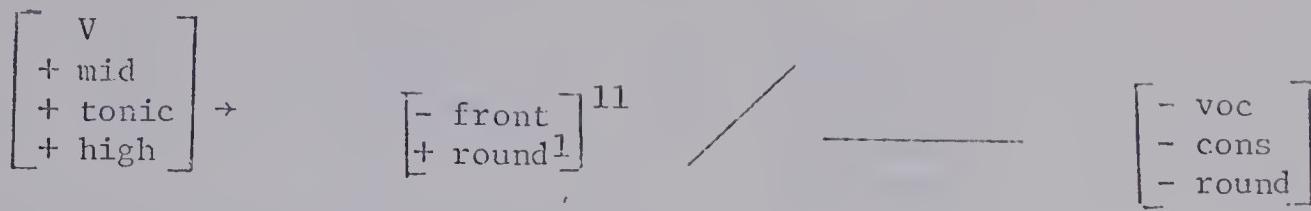
i.e. stressed |e| → /o/ when followed by /j/

Rule (4) must apply before Rule (5), because otherwise the
environmental conditions on Rule (5) will not be met.

4. /o/:/ωε/

The underlying vowel is a lax |ɔ| which becomes /o/ in pre-tonic
position.[12] This alternation is phonetically predictable since open |ɔ|
does not occur in a closed syllable.

Rule (6)

$$
\begin{bmatrix} V \\ + \text{ round} \\ - \text{ tense} \end{bmatrix} \rightarrow [+ \text{ high}] \Big/ \begin{bmatrix} \underline{\qquad\qquad} \\ + \text{ pre-tonic} \end{bmatrix}
$$
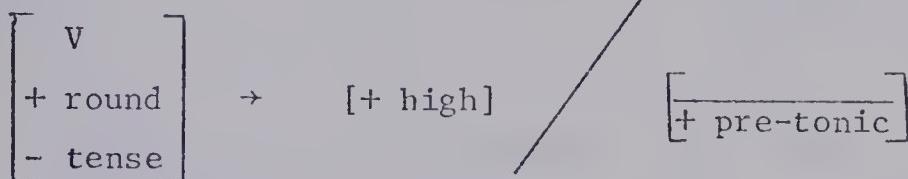
i.e. |ɔ| → /o/ in pre-tonic position.

The |ɔ|:/ωε/ alternation is also handled by two rules. First
insert a glide /ω/ before the |ɔ|, and then convert |ɔ| to /ε/.[13]

---

11. Actually [+ round] is a redundant feature for [o], because the latter
     is the only vowel in the system which is [+high] and [-front]. The
     rules that insert redundant features have already applied, in an
     earlier stage of the phonological component. The problem of fully
     specifying segments introduced by phonological rules has not yet
     been solved by generative linguists.

12. "The strengthening of the stress on the tonic syllable in Gallo-Roman
     was accompanied by a lessening of the secondary stress sufficient
     to cause a modification of the pronunciation of the mid-open vowels
     ę and ǫ ... ǫ countertonic closing to ọ, unless followed by Ɉ +
     consonant. (Pope 1934:107)

13. Again there is historical evidence of |ɔ| > /uɔ/ > /uε/. e.g.
     cuovre:cuevre; uevre:uevre (Fouché 1967:41)

Rule (7) glide insertion

$$\phi \quad \rightarrow \quad \begin{bmatrix} - \text{ voc} \\ - \text{ cons} \\ + \text{ round} \end{bmatrix} \bigg/ \underline{\hspace{1cm}} \begin{bmatrix} V \\ + \text{ mid} \\ - \text{ high} \\ + \text{ round} \\ + \text{ tonic} \end{bmatrix}$$
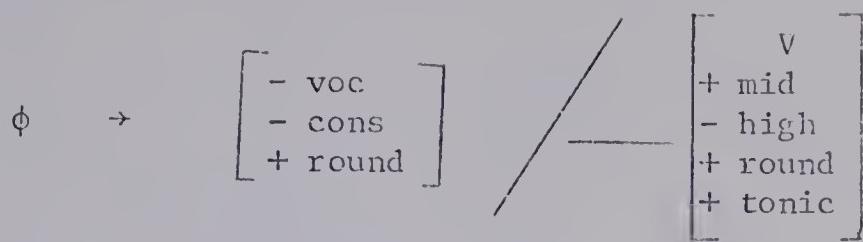
i.e. insert /ɯ/ before stressed $|ɔ|$.

Rule (8) $|ɔ| \rightarrow /\varepsilon/$ after /ɯ/.

$$\begin{bmatrix} V \\ + \text{ mid} \\ - \text{ high} \\ + \text{ tonic} \end{bmatrix} \rightarrow \quad [- \text{ round}] \bigg/ \begin{bmatrix} - \text{ voc} \\ - \text{ cons} \\ + \text{ round} \end{bmatrix} \underline{\hspace{1cm}}$$
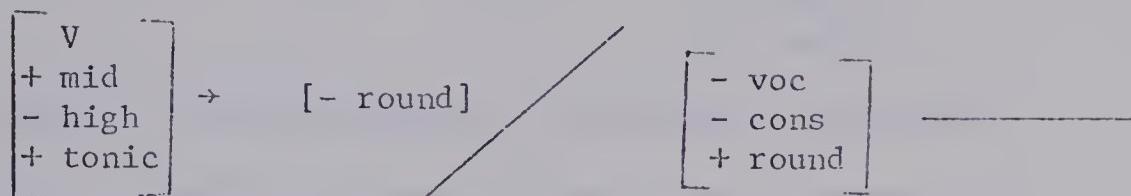
Again, Rule (7) must precede Rule (8) to provide the environmental conditions necessary for the operation of Rule (8).

Rules (5) and (8) can be conflated:

Rule (9)

$$\begin{bmatrix} V \\ + \text{ mid} \\ \alpha \text{ high} \\ \alpha \text{ front} \end{bmatrix} \rightarrow \quad [- \alpha \text{ front}] \bigg/ \left\{ \begin{array}{ll} \text{(a)} & \underline{\hspace{1cm}} \begin{bmatrix} - \text{ voc} \\ - \text{ cons} \\ + \text{ front} \end{bmatrix} \\ \text{(b)} & \begin{bmatrix} - \text{ voc} \\ - \text{ cons} \\ - \text{ front} \end{bmatrix} \underline{\hspace{1cm}} \end{array} \right\}$$
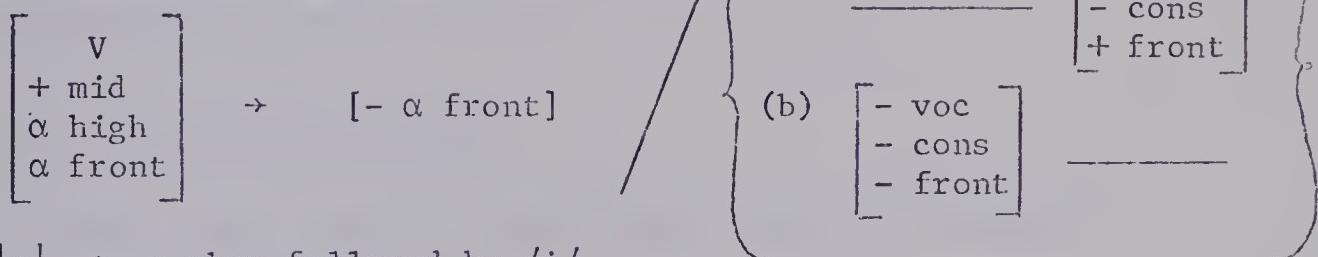
i.e. $|e| \rightarrow$ o when followed by /j/.

$|ɔ| \rightarrow /\varepsilon/$ when preceded by /ɯ/.

5. $|o|$: /oɯ/

The underlying vowel must be a lax $|o|$ because it exhibits a a different diphthong in stressed position than the unstressed /o/ of set 4. Again a diphthongization, glide insertion, rule is required.

Rule (10)

$$\phi \quad \rightarrow \quad \begin{bmatrix} - \text{ voc} \\ + \text{ cons} \\ + \text{ round} \end{bmatrix} \bigg/ \begin{bmatrix} + \text{ high} \\ + \text{ tonic} \\ + \text{ round} \\ + \text{ med} \end{bmatrix} \underline{\hspace{1cm}}$$

i.e. insert /ɯ/ after stressed $|o|$.

Rules (7) and (10) can be conflated, since /ɯ/ is inserted before

a back vowel that is [- high] and after a back vowel that is [+ high].

Rule (11)

$$\phi \rightarrow \begin{bmatrix} - \text{ voc} \\ - \text{ cons} \\ + \text{ round} \end{bmatrix} \Big/ \begin{Bmatrix} \text{(a)} \quad \underline{\qquad} \begin{bmatrix} - \text{ high} \\ + \text{ mid} \\ + \text{ round} \\ + \text{ tonic} \end{bmatrix} \\ \text{(b)} \begin{bmatrix} \text{V} \\ + \text{ high} \\ + \text{ mid} \\ + \text{ round} \\ + \text{ tonic} \end{bmatrix} \underline{\qquad} \end{Bmatrix}$$
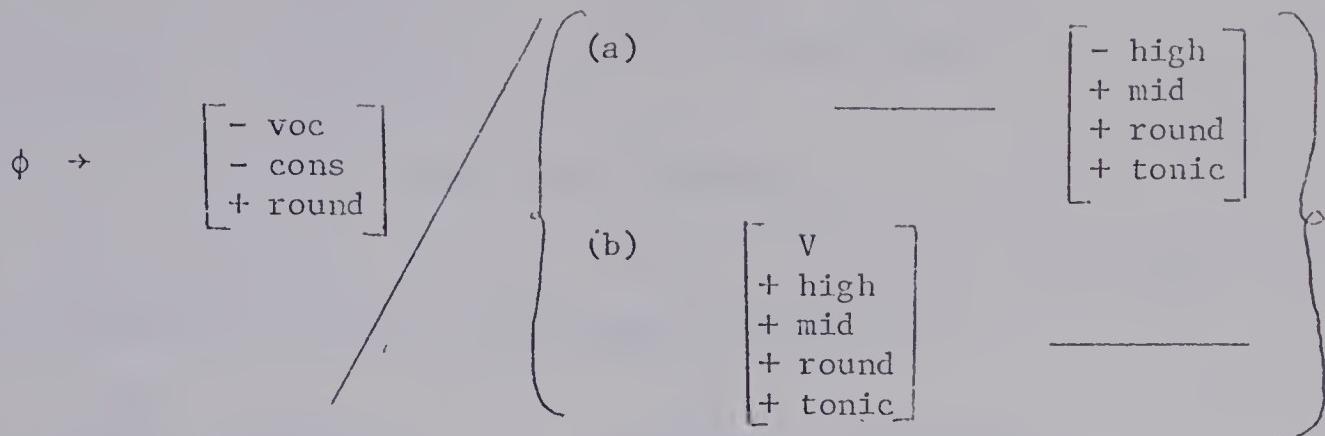
i.e. insert /j/ before stressed |ɛ| and after stressed /e/.

insert /ɯ/ before stressed |ɔ| and after stressed /o/.

From the data so far explored it is possible to set up five

underlying lax vowels in addition to the seven tense ones already

established. /i/ and /y/ exhibit no countertonic alternation. Thus the

system consists of I, E, A, Ɔ, O, Y; e, ɛ, a, ɔ, o.

2.0.3 Post-tonic Vowels

In post-tonic position all [+ high] vowels are deleted.

Rule (13)

$$\begin{bmatrix} \text{V} \\ + \text{ high} \end{bmatrix} \rightarrow \phi \Big/ \begin{bmatrix} \underline{\qquad} \\ +\text{post-tonic} \end{bmatrix}$$

A sample derivation from Schane (1968:102) is illustrative:

<u>perdre</u> ' to lose'

```
|pɛrd + e + r| #
p'ɛrd + e + r #        (stress placement)
p'ɛrd +      r #        (post-tonic high vowel deletion)
p'ɛrdrə#                (schwa insertion) 14
/pɛrdrə/
```

A non-high vowel in post-tonic position is converted to schwa [ə].

---

14. This schwa is the "voyelle d'appui" - it is added after a consonant
     +liquid cluster in word final position. Schane gives a rule (p.41).

Rule (14)

$$\begin{bmatrix} V \\ - \text{ high} \end{bmatrix} \rightarrow \begin{bmatrix} - \text{ tense} \\ + \text{ mid} \\ - \text{ front} \\ - \text{ round} \end{bmatrix} \bigg/ \begin{bmatrix} \underline{} \\ + \text{ post-tonic} \end{bmatrix}$$
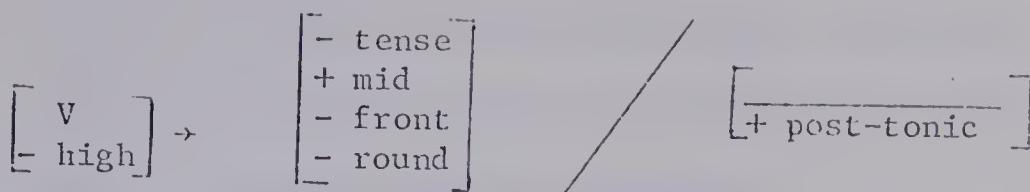
i.e. |ε, a, ,| → /ə/ in post-tonic position.

There are several examples of this in Old French, especially in First Conjugation verbs where the thematic vowel is |a|:

/ə/		|a|	
aiment	[ajmənt]	amassent	[am'asənt]
parles	[p'arləs]	parlasses	[parl'asəs]

On the basis of this we can use Schane's stress rule for Old French, as will be demonstrated in the section on Verb Endings.

The phonological rules required up to this point are listed below. (The numbers in parenthesis refer to rule and page numbers as they appear in the text).[15]

O.F.1. Stress placement

V → [+ stress] when no tense vowel or = juncture follows

O.F.2. Rule for pre-tonic schwa conversion:

|ε| and |e| → /ə/ in pre-tonic position. (p.35)

O.F.3. |a| → /ε/ when stressed. (Rule (1), p.36)

O.F.4. |e| → /o/ when followed by /j/.

|ɔ| → /ε/ when preceded by /w/. (Rule (9), p.40)

---

14. "In morpheme final position:

/ə/ is inserted after a consonant + liquid cluster."

or

$$\phi \rightarrow \begin{bmatrix} V \\ - \text{ high} \\ + \text{ mid} \\ - \text{ front} \\ - \text{ round} \end{bmatrix} \bigg/ \begin{bmatrix} + \text{ cons} \\ - \text{ voc} \end{bmatrix} \begin{bmatrix} + \text{ cons} \\ + \text{ voc} \end{bmatrix} \underline{}$$
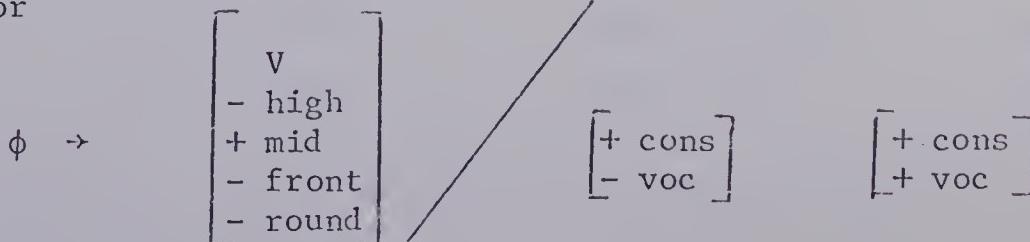
15. O.F. = Old French.

O.F.5. <u>Glide insertion</u>

insert /j/ before stressed $|\varepsilon|$; <u>after</u> stressed $|e|$.

insert /w/ before stressed $|\jmath|$; <u>after</u> stressed $|o|$. (Rule (11), p.41)

O.F.6. <u>Rule for closed syllable adjustment</u>

$|\jmath| \rightarrow /o/$ in a closed syllable (Rule (6), p.39).

O.F.7. <u>Schwa insertion</u>

$\phi \rightarrow /\partial/ \quad CL \rightarrow$ (p.42 Footnote # 14).

O.F.8. [+ high] vowel deletion

$$\begin{bmatrix} V \\ + \text{ high} \\ - \text{ tense} \end{bmatrix} \rightarrow \phi \Big/ \begin{bmatrix} \underline{\hspace{3cm}} \\ + \text{ post-tonic} \end{bmatrix} \qquad \text{(Rule 13, p. 41)}$$

O.F.9. <u>Non-high vowel schwa conversion</u>

$$\begin{bmatrix} V \\ - \text{ high} \end{bmatrix} \rightarrow \quad /\partial/ \Big/ \begin{bmatrix} \underline{\hspace{2cm}} \\ + \text{ post-tonic} \end{bmatrix} \quad \text{(Rule 14, p.42)}$$

N.B. The stress rule must apply before all the others, since the others are all dependent on stress in the syllable, except Rules 6 and 7.

The glide insertion Rule (5) must apply before (4) since the latter is conditioned by the presence of a glide.

The rest of the rules do not have to apply in sequential order.

Thus the ordering of the rules may be stated as 1 > 5 > 4, 2, 3, 7, 8, 9.

2.1. VERB ENDING

The regular verbs of Old French can be conveniently divided according to their thematic vowels.

2.1.1 CLASS I - Verbs with $|a|$

<u>The Present Indicative</u> of <u>amer</u>, 'to love'

	Singular	Plural
First person	aim ['ajm]	amons [am'ɔ̃ns][16]
Second person	aimes ['ajmǝs]	amez [am'ets]
Third person	aime ['ajm]	aiment ['ajmǝ̃nt]

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16. All vowels become nasalized when followed by a nasal consonant. The following nasal also lowers the preceding vowel.
Rule for nasalization:

$$(10) \qquad \begin{bmatrix} V \end{bmatrix} \rightarrow \begin{bmatrix} + \text{ nasal} \\ - \text{ high} \end{bmatrix} \underline{\hspace{3cm}} \begin{bmatrix} C \\ + \text{ nasal} \end{bmatrix}.$$

The underlying forms consist of the verb stem am[17] plus the thematic vowel $|a|$[18] and the person endings.

In the present indicative of Old French there is no overt first person singular marker. However the thematic vowel $|a|$ is deleted, which is very unusual. Lax $|a|$ is regularly converted to /ə/ in post-tonic position, and there is no reason why it should not have remained as /ə/ here. One possible explanation is that the $|a|$ is deleted because another vowel follows. This vowel is then deleted by the post-tonic vowel deletion rule. It must, therefore, be a non-low vowel, since all low vowels are converted to schwa in post-tonic position.

Another alternative is to posit $|\phi|$ (zero) as the person marker and have an ad-hoc rule that deletes the thematic vowel in the first person singular of the present indicative. It will be demonstrated later, however, that it is necessary to posit a non-low vowel as the first person singular suffix in other tenses. For the moment though, the vowel need only be specified as [+high, -tense].

A new rule is needed to account for the deletion of $|a|$ before another vowel.

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17. $|a| \rightarrow$ /ɛ/ when stressed (Rule 3). The following nasal however, prevented the $|a|$ from developing as free and stressed and it did not become /ɛ/ until a later period in the history of the language. At this time it was a diphthong /aj/. Rule (3) must, therefore, be divided into two states:

$$(i) \quad |a| \rightarrow /aj/ \quad / \quad \begin{bmatrix} + \text{ tonic} \\ - \text{ tense} \end{bmatrix}$$

(ii) /aj/ → /ɛ/ unless a nasal follows.

18. Although the thematic vowel is not overtly $|a|$ in this tense, we know that the schwa is not any of the other non-high vowels in post-tonic position, because the $|a|$ is realized phonetically in the imperfect subjunctive and perfect tenses, where it is stressed. e.g. am'as, am'assent.

Rule (11)

$$
\begin{bmatrix} V \\ - \text{front} \\ - \text{round} \\ - \text{stress} \end{bmatrix} \longrightarrow \phi \quad / \quad \underline{\hspace{3cm}} \quad V
$$
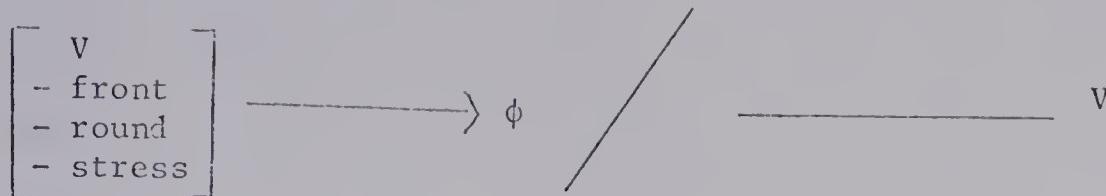
i.e. unstressed[19] $|a|$ or $/\partial/$[20] $\rightarrow$ ϕ before another vowel.

The person endings are acquired by the following lexical insertion rules:

1 (a) $\begin{bmatrix} +AF \\ -PL \\ +1P \\ -3P \end{bmatrix} \rightarrow \begin{bmatrix} V \\ +\text{high} \\ -\text{tense} \end{bmatrix}$

(b) $\begin{bmatrix} +AF \\ +PL \\ +1P \\ -3P \end{bmatrix} \rightarrow |\underline{Ons}|$

2 (a) $\begin{bmatrix} +AF \\ -PL \\ -1P \\ -3P \end{bmatrix} \rightarrow |\underline{s}|$

(b) $\begin{bmatrix} +AF \\ +PL \\ -1P \\ -3P \end{bmatrix} \rightarrow |\underline{Ets}|$[21]

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19. The $|a|$ can be either [±tense]. As long as it is unstressed, it will be deleted. e.g. tense $|A|$ deletes in the second and third person plural of the future tense before $|-O'ns|$ and $|-E'ts|$, but remains in the first person singular before $|-i|$ because it, $|A|$, is in tonic position there.

    $| a'm + A' + i |$

20. All unstressed $|a| \rightarrow /\partial/$, unless they belong to the special class of forms which do not undergo pre-tonic adjustment. Therefore, this rule will delete all unstressed $|a|$'s even if they have already been converted to schwa. It will also delete any other non-high vowels which have been converted to schwa in post-tonic position before another vowel.

21. The orthographic /z/ was phonetically [ts] in Old French (Darmesteter, 1902:148).

3 (a) $\begin{bmatrix} +\text{AF} \\ -\text{PL} \\ -1\text{P} \\ +3\text{P} \end{bmatrix} \rightarrow |t|$

3 (b) $\begin{bmatrix} +\text{AF} \\ +\text{PL} \\ +3\text{P} \\ -3\text{P} \end{bmatrix} \rightarrow |nt|$

The third person singular marker `t` usually deletes when preceded by /a/.[22]

Rule (12)

$$|t| \rightarrow \phi \begin{bmatrix} V \\ -\text{front} \\ -\text{round} \end{bmatrix} / \underline{\hspace{2cm}} \#$$
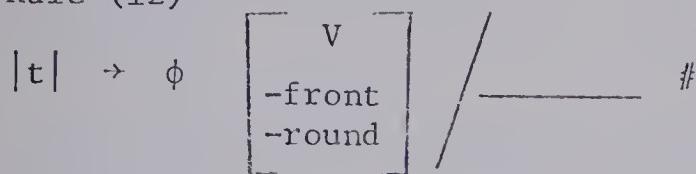
Sample Derivations:

1. aim   ['ajm]   'I love'
   $\#|$am + a + V$|\#$
     'am + a + .V $\#$ (Rule 1)
     'ajm + a + V $\#$ (Rule 3)
     'ajm +   V $\#$ (Rule 11)
     'ajm $\#$ (Rule 8)

2. aiment ['ajmənt] 'they love'
   $\#|$am + a + nt$|\#$
     'am + a + nt $\#$ (Rule 1)
     'ajm + a + nt $\#$ (Rule 3(i))
     'ajm + ə + nt $\#$ (Rule 9)

3. amons [am'õns] 'we love'
   $\#/$am + a + Ons$/\#$
     am + a + O $\#$ (Rule 1)
     am + a " 'õns $\#$ (Rule 10)
     am   +   'õns $\#$ (Rule 11)

Imperfect Indicative

	Singular		Plural	
First person	amois	[ãm'ojə]	amions	[amj'õns]
Second person	amoies	[ãm'ojəs]	amiez	[ãmj'ets]
Third person	amoit	[ãm'ojt]	amoient	[ãm'ojə̃nt]

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22. <u>aimet</u> also occurred a few times. (McCulloch, 1959:16).

The forms consist of |am| + |a|, (the verb stem) |+Ea|, the imperfect marker, and the person endings. The |E| of the imperfect marker must be tense to receive the stress in the singular and third plural. It must then be laxed in order to diphthongize.

Rule (13)

$$\begin{bmatrix} V \\ +mid \\ +front \end{bmatrix} \rightarrow [-tense] \ / \ \_\!\_\!\_\!\_ \ V$$
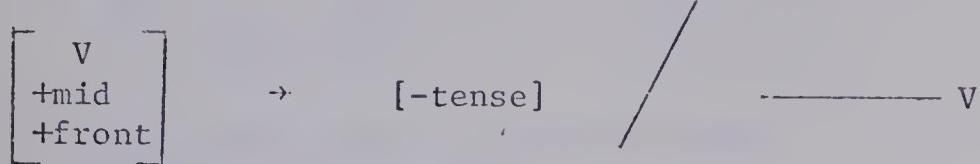
We also need a rule to convert the /E/ to /j/ in the first and second person plural.

Rule (14)

$$\begin{bmatrix} V \\ +mid \\ +front \end{bmatrix} \rightarrow [-voc] \ / \ \_\!\_\!\_ \begin{bmatrix} V \\ +stress \end{bmatrix}$$
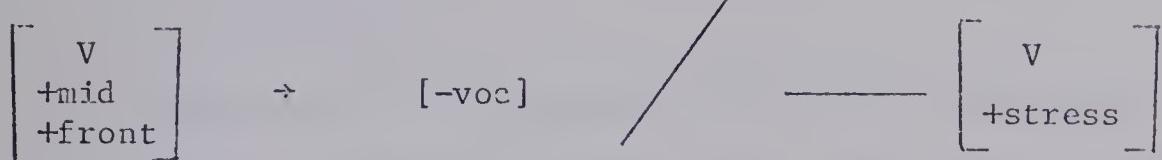
The thematic vowel does not occur in the third person singular of the imperfect indicative. We need a rule to account for its deletion.

Rule (15)

$$\begin{bmatrix} V \\ -front \\ -round \\ -tense \end{bmatrix} \rightarrow \phi \ / \ +V \ \_\!\_\!\_ \ t\#$$
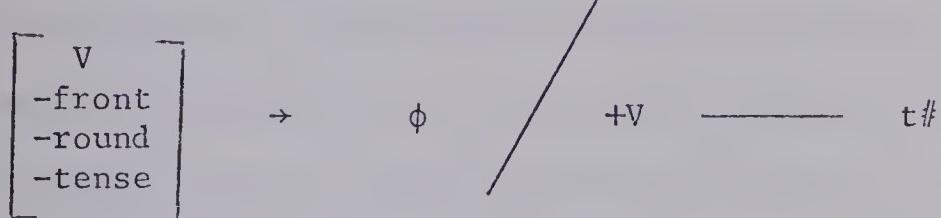
Rule (15) **must** apply **before** Rule (12). Otherwise all /t/'s would be deleted and the environmental conditions for Rule (15) would not be met.

Sample Derivations

1. aime ['ajɲə] 'he loves'
    #|am + a + t|#
    'am + a + t #   (Rule 1)
    'ajm + a + t #   (Rule 3(i))
    'ajm + ə + t #   (Rule 9)
    'ajm + ə   #   (Rule 12)
        /'ajmə/

2.   <u>amoit</u> [ãm'ojt] 'he was loving'

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 #|am  +  a  + Ea  + t|#
   am  +  a  +'Ea  + t #        (Rule 1)
   am  +  a  +'ea  + t #        (Rule 13)
   am  +  a  +'eja + t #        (Rule 5)
   am  +  a ++'oja + t #        (Rule 4)
   am  +  a  +'ojə + t #        (Rule 9)
   ãm  +  a  +'ojə + t #        (Rule 10)
   ãm  +        'ojə + t #       (Rule 11)
   ãm  +        'oj  + t #       (Rule 15)
        /ãm'ojt/
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3.   <u>amions</u> [ãmj'õns] 'wé were loving'

```
 #|am + a + Ea + Ons|#
   am + a + Ea + Ons # (R       (Rule 1)
   am + a + ea + 'Ons #         (Rule 13)
   ãm + a + ea + '~ns #         (Rule 10)
   ãm +     e  + '~ns #          (Rule 11)
   ãm +     j  + '~ns #          (Rule 14)
        /amj·'~ns/
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The only form not accounted for is the first person singular: /am'ojə/. We cannot have a vowel as the first person singular marker here because the /a/ is not deleted, only converted to schwa. This tense (and the conditional) will have to be marked in the lexicon for the absence of a first person singular morpheme. As discussed earlier, it would be possible not to have a person marker in the base form, but then the other tenses, in which there is evidence of a person suffix will have to be marked in the lexicon instead. Since there are only two tenses (i.e. the imperfect and conditional) where the person marker is definitely absent in the underlying representation, it is more economical to mark the latter in the lexicon.

It is interesting to note that if the rules for |a| deletion and high vowel deletion were applied in reverse order here we would obtain the correct result.

e.g. <u>amoie</u> [ãm'ojɛ]

$$|am + a + Ea + \begin{bmatrix} V \\ + high \end{bmatrix} | \#$$

am + a + 'Ea + V	(Rule 1)
am + a + 'ea + V	(Rule 13)
am + a + 'eja + V	(Rule 5)
am + a + 'oja + V	(Rule 4)
am + a + 'oja	(Rule 8)
am + 'oja	(Rule 11)
am + 'ojə	(Rule 9)
ãm + 'ojə	(Rule 10)
ãm'ojə	

<u>aim</u>   ['ajm]

$$|am + a + \begin{bmatrix} V \\ +high \end{bmatrix} | \#$$

'am + a + V	(Rule 1)
'ajm + a + V	(Rule 3(1))
'ajm + V	(Rule 11)
'ajm	(Rule 8)
/'ajm/	

Stephen Anderson, in his thesis on West Scandanavian vowels, also found that a reversal in the ordering of his phonological rules could account for forms which would otherwise have to be marked in the lexicon. He calls this device "local orderings", and makes his lexical items sensitive to this process.

The point in question is: which is simpler - to mark the first person singular morpheme in the lexicon for its distribution, or to mark it as being sensitive to re-ordering of Rules (8) and (11)? Generative

linguists have not yet been able to determine how much it "costs" a grammar to mark a lexical item as being sensitive to a certain rule, or rule sequence. Perhaps if we had some kind of notational convention which would permit us to mark the rules themselves, the problem could be solved.[23]

In this analysis there is only one occurrence of an ordering paradox: Rules (8) and (11) are reversed when preceded by the Imperfect morpheme. This is not sufficient evidence for introducing an ad hoc convention for marking rules. Therefore, we will assume that the imperfect morpheme is sensitive to the re-ordering of rules so that (8) precedes (11), but in our ordering statement (11) precedes (8) since the latter order is the more general.

Future Indicative

	Singular		Plural	
First person	amerai	[ãmər'aj]	amerons	[ãmər'˜ns]
Second person	ameras	[ãmər'as]	amerez	[ãmər'ets]
Third person	amera	[ãmər'a]	ameront	[ãmər'˜nt]

The forms consist of $|am| + |a| + |rA|$ (future morpheme) and person endings. It is now possible to fully specify the first person singular marker as $|i|$. A rule converts $|i|$ to /j/ after a stressed vowel, giving /aj/, which is how the first person marker was pronounced.

Rule (16)

$$\begin{bmatrix} V \\ +high \\ -mid \\ +front \end{bmatrix} \rightarrow [-syll] \;/\; \begin{bmatrix} -V \\ +tonic \end{bmatrix} \underline{\hspace{2cm}}$$

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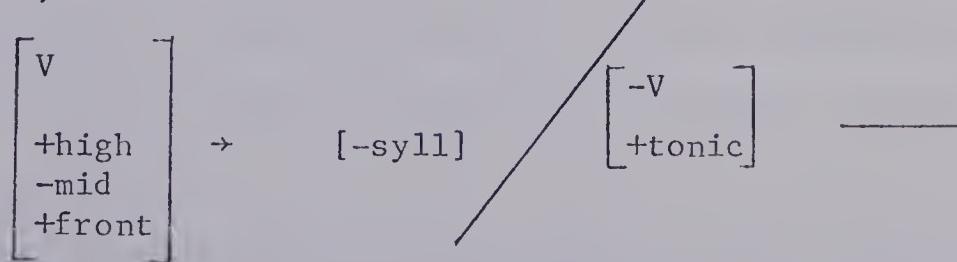
23. Reversal of rule ordering, diachronically, where an earlier sequence of rules a – b, is converted to a later rule sequence b – a, has been discussed by Paul Kiparsky as one type of phonological change, (Kiparsky 1968). He also uses this device to account for dialectal differences in Finnish. However the rules that undergo re-ordering, affect the output of each other, whereas rules (8) and (11) operate in independent environments.

($|i|$ → /j/ when preceded by a stressed vowel)

Derivation – <u>amera</u> [ãmər'aj] 'I will love'

$|am + a + rA + i|\#$

am + a + r'A + i#   (1)

am + ə + r'A + i#   (Pre-tonic schwa conversion)[24]

am + ə + r'A + j#   (Rule 16)

ãm + ə + r'A + j#   (Rule 10)

/ãmər'aj/

The third person plural exhibits a unique ending: $|ont|$. Schane accounts for this in modern French by positing an underlying $|unt|$ as the suffix, and then converting the $|A| + |u|$ to /o/ (Schane 1968:80). Since we do not have an underlying $|u|$ in the Old French vocalic system, we shall posit $|ont|$ instead, and adapt Schane's rule.

Rule (17)

$|A| + |o|$ becomes /0/

This could be interpreted as another dipthongization rule:

$|A| + |o|$ → /Aw/ → /0/

Rule (17) must be ordered before the high vowel deletion rule, otherwise the $|o|$ would delete in post-tonic position, and tense $|A|$ would remain.

The suffix for the third person plural is now $|ont|$ instead of $|nt|$ as stated earlier. Since the $|o|$ only combines with a preceding tense $|A|$, the present and imperfect indicative endings will still be

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24. All pretonic $|a|$'s are converted to schwa except in initial position, unless they belong to the special class of vowels which do not undergo pretonic adjustment.

realized as [~nt]25 and the lax thematic |a| will be deleted.26

Rule (11)

Sample Derivations:

1. <u>ameras</u> [ãmər'as]   'you (sg.) will love'

    #|am + a + rA + s|#

      am + a + r'A + s #   (Rule 1)

      am + ə + r'A + s #   (Rule 17)

      ãm + ə + r'A + s #   (Rule 10)

      /ãmər'as/

2. <u>ameront</u> [ãmər̃nt]   'they will love'

    #|am + a + rA + ont|#

      am + a + r'A + ont #   (Rule 1)

      am + ə + r'A + ont #   (Rule 17)

      am + ə + r   + 'Ont #   (Rule 18)

      ãm + ə + r   + '̃nt #   (Rule 10)

      /ãmər'̃nt/

3. <u>amerons</u> [ãmər'̃nt]   'we shall love'

    #|am + a + rA + Ons|#

      am + a + rA + 'Ons #   (Rule 1)

      am + ə + rA + 'Ons #   (Rule 17)

      am + ə + r   + 'Ons #   (Rule 11)

      ãm + ə + r   + '̃ns #   (Rule 10)

      /ãmər'̃ns/

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25. |o| → |̃| before a nasal, and |̃| is [-mid] so it will be converted
     to [ ] in post-tonic position (9).

26. <u>Derivation</u>

Conditional

	Singular		Plural	
First person	ameroie	[ãmər'ojə]	amerions	[ãmərj'ˉns]
Second person	ameroies	[ãmər'ojəs]	ameriez	[ãmərj'ets]
Third person	ameroit	[ãmər'ojt]	amerioient	[ãmər'ojənt]

No new rules are needed. The underlying forms consist of |am|
(stem) + |a| (thematic vowel) + |r| (conditional marker) + |Ea| (imperfect
marker) + person endings.

Sample Derivations

(a) ameroies [amər'ojəs]

   #|am + a + r + Ea + s|#

   am + a + r + 'Ea + s #   (Rule 1)

   am + a + r + 'ea + s #   (Rule 13) (laxing)

   am + a + r + 'eja + s #   (Rule 5)

   am + a + r + 'oja + s #   (Rule 4)

   am + a + r + 'ojə + s #   (Rule 7)

   am + ə + r + ojə + s #   (Pre-tonic |a| adjustment)

   am + ə + r + ojə + s #   (Rule 10)

   /ãmər'ojəs/

26.

   aiment   ['ajmə̃nt] 'they love'

   #|am + a + ont|#

   'am + a + ont   (Rule 1)

   'ajm + a + ont   (Rule 3(i))

   'ajm + ont   (Rule 11)

   'ajm + ˜ɔnt   (Rule 10)

   'ajm + ə̃nt   (Rule 9)

   /'ajmə̃nt/

(b) ameriez [ãmərj'ets]

$\#|$am + a + r + Ea + Ets$|\#$

    am + a + r + Ea + 'Ets $\#$ (Rule 1)

    am + a + r + E + 'Ets $\#$ (Rule 11)

    am + ə + r + E + 'Ets $\#$ (Rule 7)

    am + ə + r + j + 'Ets $\#$ (Rule 14)

    ãm + ə + r + j + 'Ets $\#$ (Rule 10)

    /ãmərj'ets/

Perfect

	Singular	Plural
First person	amai [ãm'aj]	amames [ãm'ames]
Second person	amas [am'as]	amastes [ãm'astes]
Third person	ama [am'a]	amerent [ãm'ɛrənt]

The forms consist of $|$am$|$ (stem), + $|$A$|$ (thematic vowel), + $|$s$|$ (perfect marker), and the person endings.[27] The thematic vowel must be tense to receive the stress, so a special "tensing" rule is needed. The only tenses where the thematic vowel is stressed are the ones that belong to the "past aspect", i.e. the perfect and imperfect subjunctive. (Rule (19))[28]

$$\begin{bmatrix} V \\ +\text{thematic} \end{bmatrix} \rightarrow [+\text{tense}] \Big/ \underline{\quad\quad} [+\text{past}]$$
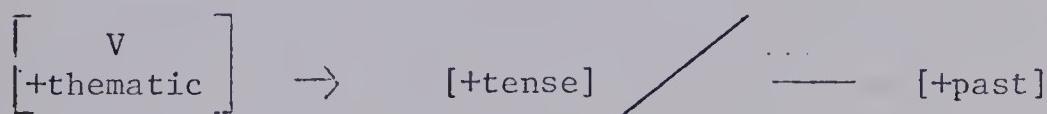
The only form where the perfect marker is absent in the under-lying representation is the first person singular,[29] and it must be

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27. The perfect morpheme, $|$s$|$, apparently occurs only in <u>amastes</u> in the preterite. Further evidence for it is provided by the forms of imperfect subjunctive where it occurs throughout the paradigm. e.g. amasse [am'asə] (see below).

28. Rule (19) must apply before stress placement in order that the stress is placed on the thematic vowel.

29. Schane derives the /i/ of the first person singular from an underlying

marked as such in the lexicon. All the other forms can be derived by the application of phonological rules.

Rule (20)

$$|s| \rightarrow \phi \ / \ \underline{\qquad} \left\{ \begin{array}{c} C \ \# \\ \left[\begin{array}{c} C \\ +\text{nasal} \end{array} \right] \end{array} \right\}$$
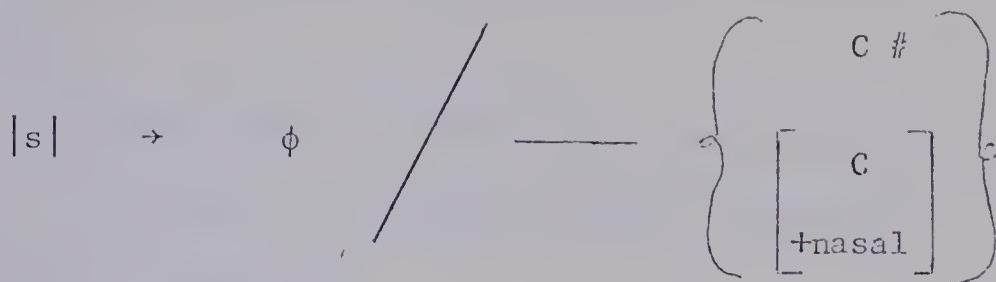
i.e. $|s|$ deletes before a consonant in word final position, or before a nasal.

The first and second person plural suffixes have been dealt with by Schane (1968:87), by using a methathesis rule. In the underlying form the nasal in the first person plural suffix $|-\text{Ons}|$ was specified as $|n|$. If we change it to $|m|$ and let an assimilation rule[30] convert it into an /n/ when followed by $|s|$, it is possible to derive /mes/ from $|\text{Oms}|$.

> "The underlying vowel segment, i.e. tense $|0|$ must be
> changed to schwa for the preterite variant. If 0 were to
> be made lax and low, i.e. / /, the rule for schwa conversion
> would then convert / / to /ə/ since post-tonic lax low
> vowels always become schwa. The metathesis rule must there-
> fore perform two functions: (1) it interchanges the first
> two segments of underlying $|\text{Oms}|$, and (2) it lowers and lax-
> es the vowel segment." (Schane 1968:88)

Metathesis and laxing must occur before stress placement, otherwise the $|o|$ would receive stress and would not be converted to schwa.

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30. Assimilation Rule (21)

$$\left[\begin{array}{c} C \\ +\text{nasal} \end{array} \right] \rightarrow \left[\begin{array}{c} \alpha \text{ diff} \\ \beta \text{ grv} \end{array} \right] \ / \ \underline{\qquad} \left[\begin{array}{c} C \\ \alpha \text{ diff} \\ \beta \text{ grv} \end{array} \right]$$
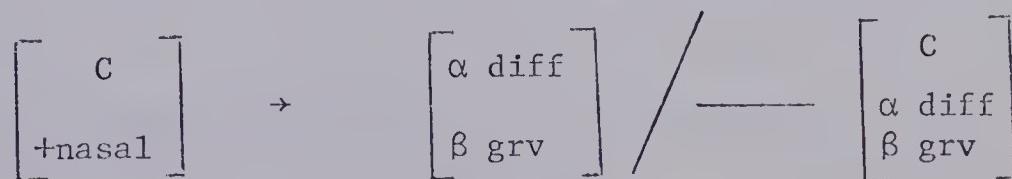
The second person plural ending |tes| is similar, and we would get the correct derived form if |Ets| becomes /tEs/. The vowel segment is laxed and lowered, giving /tɛs/ and the /ɛ/ is then converted to schwa.

The environment in which these changes occur is when the person endings are preceded by a single consonant morpheme.[31]

(22) <u>Rule for Metathesis</u>:

After a single consonant morpheme

|+Oms|, |+Ets|:

(i) undergo metathesis of the first two segments.

(ii) the vowels become [-tense] and [+low].

For the third person plural form a laxing rule is needed to account for the /ɛ/ in /-erent/. Only lax |a| became /ɛ/, (Rule 3) so the thematic vowel must be laxed. (It has to be tense in the underlying form to receive stress).

(23) <u>Rule for Laxing</u>

$$V \rightarrow [-tense] \ / \ \underline{\quad\quad} \ C$$

Conditions: (1) V is the thematic vowel.

The thematic vowel is laxed when a single consonant follows.

The perfect marker in the third person plural [am'er nt], occurs as /r/ in the phonetic representation. Since we have already determined the perfect morpheme is |s|, a rule is needed to convert |s| to /r/ when

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31. This is a morphological rule. An alternative is to have a substitute rule in the lexical insertion rules:

$$\begin{bmatrix} +AF \\ +PL \\ -\text{third person} \end{bmatrix} \rightarrow \begin{bmatrix} (a) \ \underline{mes} \\ (b) \ \underline{tes} \end{bmatrix} \ / \ [+\text{perfect}] \begin{bmatrix} (a) \boxed{+\text{first person}} \\ (b) \boxed{-\text{first person}} \end{bmatrix}$$
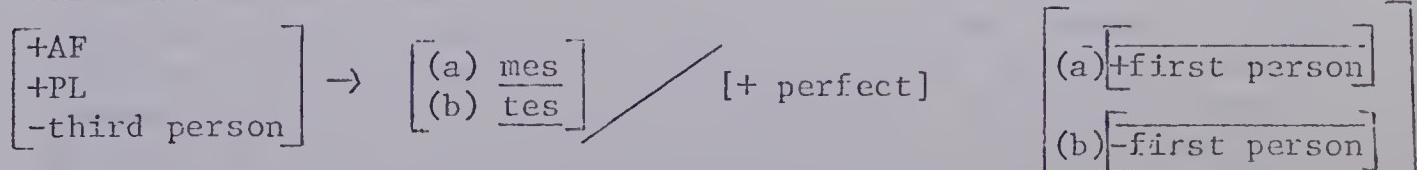
This rule would apply both to Old and Modern French. Since our purpose here, however, is to show that many of Schane's rules for Modern French can apply to Old French as well, we will adhere to his analysis.

in intervocalic position.[32]

(24) <u>Rule for Rhotacism</u>

$$|s| \quad \rightarrow \quad /r/ \Big/ \quad V\text{———}V$$
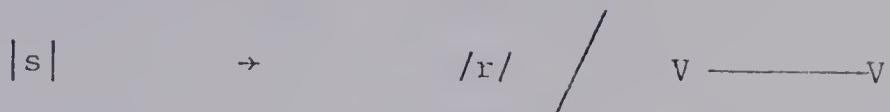
    Condition: /s/ = perfect marker.

<u>Sample Derivations:</u>

1. <u>amai</u> [ãm'aj] 'I loved'

    # am + a + i #

    am + 'A + i   (Rule 19)

    am + 'A + i   (Rule 1)

    am + 'A + j   (Rule 16)

    am + 'A + j   (Rule 10)

    /ãm'aj/

2. <u>ama</u> [ãm'a] 'he loved'.

    # am + a + s + t #

    am + A + s + t   (Rule 19)

    am + 'A + s + t   (Rule 1)

    am + 'A + t   (Rule 20)

    am + 'A   (Rule 12)

    am + 'A   (Rule 10)

    /ãm'a/

N.B. Rule (20) must apply before /t/ deletion (Rule 12). If (12) applies first, the environment for /t/ deletion will not be met, and we would get *am'at instead.

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32. All /s/'s in intervocalic position were pronounced as [z] (Pope 1934:680) but the conversion to /r/ is not a productive rule in either Old or Modern French. We shall restrict our rhotacism rule to the perfect marker |s|.

    It may be argued that the perfect marker is |z| and that it becomes devoiced in final position and before a voiceless consonant. However, /z/ does not occur in initial position in Old French, and its occurrence elsewhere is entirely predictable. So no /z/ segment is required in the underlying consonantal system of Old French. Therefore, we need a general phonological rule: |s| → [+voice] /v - v, and a morphologically restricted rule for rhotacism.

3. <u>amames</u> [ãm'ãmǝs] 'we loved'.

am + a + s + Oms #

am + a + s + mOs #   (Rule 22(i))

am + a + s + m s #   (Rule 22(ii)

am + Λ + s + m s #   (Rule 19)

am + 'Λ + s + m s #   (Rule 1)

am + 'Λ + s + mǝs#   (Rule 9)

am + 'Λ + mǝs #   (Rule 20)

/ãm'ãmǝs/

4. <u>amerent</u> [ãm'ɛrə̃nt] 'they loved'.

am + a + s + ont

am + Λ + s + ont   (Rule 19)

am + 'Λ + S + ont   (Rule 1)

am + 'a + s + ont   (Rule 23)

am + 'ɛ + s + ont   (Rule 3(i)-(ii))

am + 'ɛ + z + ont   (Voicing)

am + 'ɛ + r + ont   (Rule 24)

am + 'ɛ + r + ə̃nt   (Rule 9)

am ± 'ɛ + r + ɔ̃nt   (Rule 10)

/ãm'ɛrə̃nt/

Present Subjunctive:

	Singular	Plural	
First person	aim ['ajm]	amons	[ãm'ɔ̃ns]
Second person	ainz ['ajnts]	amez	[ãm'ets]
Third person	aint ['ajnt]	aiment	['ãjmə̃nt]

The thematic vowel does not occur in this paradigm, and must be marked in the lexicon. All the forms can be derived by applying the phonological rules already formulated. There is no suffix for the subjunctive.

Derivations

1. Aint ['ajnt]

/am + t/#

'am + t	(Rule 1)
'ajm + t	(Rule 3(i))
'ajn + t	(Rule 21)

/'ajnt/

2. aiment ['ajmə̃nt]

/am + ont/#

'am + ont	(Rule 1)
'ajm + ont	(Rule 3(i))
'ajm + ~nt	(Rule 10)
'ajm + ə̃nt	(Rule 9)

/'ajmə̃nt/

Imperfect Subjunctive

	Singular		Plural	
First person	amasse	[ãm'asə]	amesons[33]	[ãmə̃s'~ns]
Second person	amasses	[am'asəs]	amesiez	[ãmə̃sj'ets]
Third person	amast	[am'ast]	amassent	[ãm'asə̃nt]

The thematic vowel here is again tense |A| (Rule 19). The forms

consist of |am| (stem) + |A| (thematic vowel) + |s| (past suffix), the

imperfect subjunctive marker, and the person endings. The imperfect

subjunctive is |ɛ| plus an underlying low vowel, because it is realized

as schwa in the first and second person singular forms. It cannot be an

|a| since it is converted to a glide in the second person plural ending

|iez|. It must, therefore, be a lax |ɛ|. We already have a glide

formation Rule (14) which converts an unstressed |E| to /j/ before a

stressed vowel. This rule can be easily expanded so that it will apply

to |ɛ| as well.

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33. Alternating forms amissions, amissons, amissiez, amissez, also occurred
    (Pope 1934:1039). In these the thematic vowel was raised under the
    influence of the yod.

Rule 14 (Revised)

$$\begin{bmatrix} V \\ +mid \\ +front \end{bmatrix} \rightarrow [-voc] \Bigg/ \underline{\hspace{2cm}} \begin{matrix} V \\ +tonic \end{matrix}$$
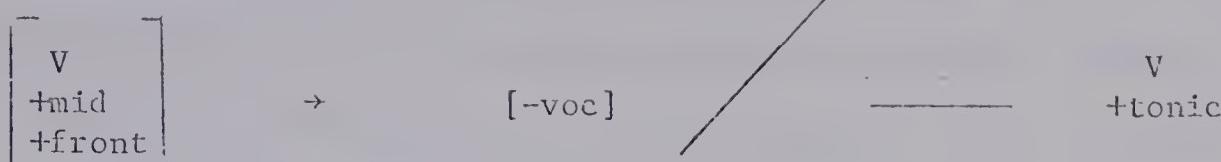
i.e. $|E|$ and $|\varepsilon|$ become /j/ before a stressed vowel.

This first person plural form is very irregular since the $|\varepsilon|$ of the imperfect subjunctive marker $|s\varepsilon|$ is not converted to a glide but rather deleted. This form will have to be marked in the lexicon. The third person singular form is also irregular. The underlying form is $|am + 'A + s + s\varepsilon + t \rightarrow /am + 'A + s + s\varepsilon + t/$ (Rule 9).

Rule (15) will not apply here because

$$\begin{bmatrix} V \\ -round \\ -front \\ -tense \end{bmatrix} \rightarrow \phi \Bigg/ V \underline{\hspace{2cm}} + t$$
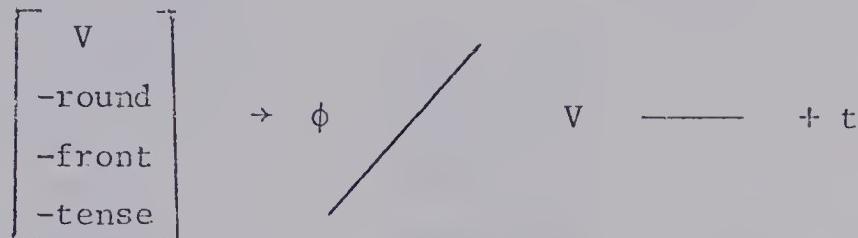
but there is no vowel preceding the /ə/ in the third person singular form. Yet it is deleted. We can condition the rule so it will not apply to the /ɛ/ of the imperfect subjunctive.

Rule 15 (Revised)

$$\begin{bmatrix} V_1 \\ -round \\ front \\ -tense \end{bmatrix} \rightarrow \phi \Bigg/ V_2 \underline{\hspace{2cm}} + t$$
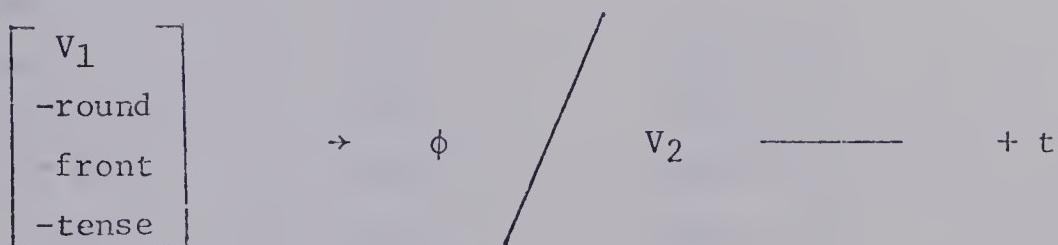
Condition: V_2 is not part of the imperfect subjunctive morpheme. No additional rules are needed to derive the forms, except a degemination rule. Although a geminate /ss/ occurs in the orthography, it was pronounced as a single [s]. (Pope 1934:680)

However, in the underlying forms a geminate /ss/ is necessary to prevent voicing in intervocalic position. Also, if there was only a single consonant in the underlying representation, the thematic vowel

would be laxed;[34] but it remains tense throughout the paradigm. The degemination rule must apply before the rule for voicing. Otherwise the /s/ in amesons and amesiez would be converted to |z|. Rule (20) must precede the degemination rule or else: |ss| > /s/ > φ, giving [ãm'at] instead of [ãm'ast].

(Rule 25)

$$[\alpha F] \quad [\alpha F] \quad \rightarrow \quad [\alpha F]$$

i.e. Two segments that share all features and are identical, become one.

Derivation:

1. amast [am'ast]

    #|am + a + s + sɛ + t|#

am + 'A + s + sɛ + t	(Rule 19)
am + A + s + sɛ + t	(Rule 1)
am + 'A + s + sə + t	(Rule 9)
am + 'A + s + sə + t	(Rule 10)
am + 'A + s + s + t	(Rule 15) does apply
ãm + 'A + s + t	(Rule 20)

    /am'ast/

2. amesiez [ãməsj'ets]

    |am + a + s + sɛ + Ets|#

am + A + s + sɛ + Ets#	(Rule 19)
am + A + s + sɛ + 'Ets	(Rule 1)
am + A + sɛ + 'Ets	(Rule 25)
am + a + sɛ + 'Ets	(Rule 23)
am + a + sj + 'Ets	(Rule 14)
am + ə + sj + 'Ets	(Rule 17)
ãm + ə + sj + 'Ets	(Rule 10)

    /'amǝsjets/

---

34. The [ə] in amesiez, amesons is derived by the rule which converts pretonic |a| to /ə/.

<u>Infinitive:</u>   amer   [ãm'er]   'to love'.

The thematic vowel must be tense to receive the stress, but must then be laxed to be converted to /ɛ/. The laxing rule applies when the vowel is followed by a single consonant.

<u>Derviation</u>

1. <u>amer</u> [am' r]

   am + a + r ^{35}

   am + A + r   (Rule 19)

   am + 'A + r   (Rule 1) stress

   am + 'a + r   (Rule 23) (laxing)

   am + ɛ + r   (Rule 3(i)(ii))

   am + ɛ + r   (Rule 9)

   am + 'ɛ + r   (Rule 10)

   /am' r/

   2.2   LIST OF RULES

   The phonological rules introduced in 2.1 are as follows:

O.F. 10. nasalization   (Page 43, Footnote (16)

O.F. 11. unstressed |a| deletes before another vowel. (Rule 11, Page 45).

O.F. 12. |t| deletes when preceded by |a| or |ə|.   (Rule 12, Page 46).

O.F. 13. |E| → [-tense] / —— V. (Rule 13, Page 47).

O.F. 14. |E| → /j/ before a stressed vowel. (Rule 14, Page 47).

O.F. 15. |a| deletes in the environment V —— + t. (Rule 15, Page 47).

O.F. 16. |i| → /j/ / $\begin{bmatrix} V \\ +stress \end{bmatrix}$ / —— /. (Rule 16, Page 50).

O.F. 17. |a| → /ə/ in pre-tonic position. (Page 51, Note (24)).

O.F. 18. |A + o| → /O/. (Rule 17, Page 51).

O.F. 19. thematic tensing: (Rule 19, Page 54).

$$\begin{bmatrix} V \\ + \text{thematic} \end{bmatrix} \rightarrow [+tense] \ / \ \underline{\quad} \ [+past]$$

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35. /r/ is the infinitive marker.

O.F. 20. |s| deletion. (Rule 20, Page 55).

O.F. 21. nasal assimilation. (Rule 21, Page 55, Note (1)).

O.F. 22. (i) methathesis

        (ii) vowel laxing and lowering. (Rule 22, Page 56).

O.F. 23. thematic laxing. (Rule 23, Page 56).

O.F. 24. |s| → |z| intervocalically. (Page 57, Footnote (32).

O.F. 25. rhotacism. (Rule 24, Page 57).

O.F. 26. degemination. (Rule 25, Page 61).

2.3. RULE ORDERING

(a) 10 > 8, 9.

The nasalization rule must apply before the rules for high post-tonic vowel deletion, and non-high post-tonic vowel schwa conversion. Rule (10) not only nasalizes the vowel but lowers it too. Thus in the present indicative, third person plural suffix the |-ont| is first converted to [-ᵕnt](10) then to [-ᵕnt] (9) to give /'ajmɔ̃nt/. If (10) did not apply first, Rule (8) would delete the |o| in post-tonic position.

(b) 11 > 8.

8 > 11 for imperfect indicative and conditional. These have been discussed in the text.

(c) 1 > 13.

Stress must apply before the vowel is laxed, because only stressed vowels dipthongize. e.g. Imperfect Indicative: |Ea| → |ojə| but

13 > 4, 5.

The vowel must be laxed before diphthongization can occur, and the |e| → /o/ only before a glide.

(d) 1 > 14.

|e| is converted to a glide before a stressed vowel. Therefore, stress rule must apply first.

(e)   15 > 12.

The   a   deletion rule must apply before |t| deletion rule, or else all |t|'s would be deleted.

(f)   1 > 16, 17.

Both (16) and (17) are conditioned by the position of stress in the syllable.

(g)   16 > 8 .

|i| must be converted /j/ before Rule (8) deletes it as a high vowel in post-tonic position.

(h) 18, 19, 22 > 1.

These three rules must apply before the stress rule so that the correct vowel can receive stress.

But,

1 > 23 > 3, 4, 5.

The thematic vowel is laxed only after it has received stress, and then it is subject to Rules (3), (4), and (5), which apply to lax, stressed vowels.

(i)   18 > 8.

|A + o| must be converted to /O/ before Rule (8) deletes high post-tonic vowels.

(j)   22 > 20, 21, 25.

Methathesis must occur before |S| deletion, otherwise the underlying |s| in <u>amames</u>, #/am + A + s + Oms/#, would not be deleted. (22) must also precede nasal assimilation or else we would |Oms| >   /Ons/> */nOs/. It must apply before degemination (25), to prevent methathesis in the Imperfect Subjunctive.

(k)   26 >   25, 20.

Degemination must preceded |s| deletion or all |s|'s would
be deleted. It must also precede rhotacism, or all |s|'s → /r/ e.g.
amesons would become *amerons.

Again using Chafe's rule ordering convention, it is possible to
set up five levels of depth for the twenty-six rules.

Rule Depth	Rule Number	Precedes Rules
V	(18)	1, 8
	(19)	1
	(22)	1, 20, 21, 25
IV	(1)	13, 14, 16, 23, 5, 2, 3, 8, 9
III	(10)	8, 9
	(11)	8
	(13)	4, 5
	(16)	8
	(23)	3, 4, 5
	(24)	25
II	(5)	4
	(26)	25, 20
	(15)	12
I	(8)	–
	(4)	–
	(14)	–
	(17)	–
	(3)	–
	(24)	–
	(20)	–
	(21)	–
	(12)	–
	(2)	–
	(6)	–
	(7)	–

A sub-division of Class I type verbs which have |a| as their

underlying thematic vowel includes

> "Those verbs whose infinitive ended in |-ier|. e.g.
> laissier; aidier, cuidier; viz. those verbs whose radical
> ended with a palatal or palatalized consonant in Gallo-
> Roman, because under the influence of such sounds |a| tonic
> free developed to /ie/. The verbs in this sub-division were
> differentiated from the others in all the terminations in
> which |a| free tonic was preceded by a palatal sound, i.e.
> in the past participle, e.g. laiss-ie, the second person
> plural of the present of the indicative (and by extension
> of the subjunctive), e.g. laiss-iez, and in the third per-
> son plural of the perfect – laiss-ierent." (Pope 1934:335).

Rule (27)

$$\phi \rightarrow \begin{bmatrix} -voc \\ -cons \\ -round \end{bmatrix} \Big/ \begin{bmatrix} -anterior \\ - back \end{bmatrix} \underline{\hspace{3cm}} \begin{bmatrix} V \\ +stress \\ +front \end{bmatrix}$$
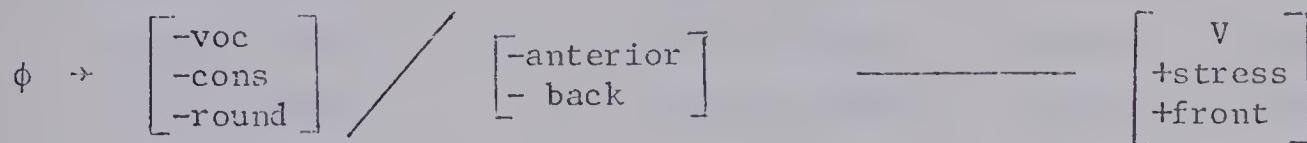
i.e. insert a /j/ after a palatal when a stressed front vowel follows.

Rule (27) must apply after (Rule (3)) which converts stressed |a| → /ɛ/.

Sample Derivation:

1.   laissiez   [les'jets]   'you (pl.) leave'

   #|1Ess + a + Ets |
   1Ess + a + 'Ets   (stress placement)
   1Ess +   'Ets   (Rule 11)
   1Es +   'Ets   (degemination)
   1Es + j + 'Ets   (Rule 27)
   /lesj'ets/

2.   aidier [edj'ɛr]   'to help'
   # Ed + a + r #
   Ed + A + r   (Rule 19)
   Ed + 'A + r   (stress)
   Ed + 'a + r   (23)
   Ed + 'ɛ + r   (3(i)(ii))
   Ed + j'ɛ + r   (27)
   /edj'ɛr/

2.4   CLASS II

The verbs that belong to this class are those that have |I|[36] as their thematic vowel. The class can be subdivided into two types of verbs: (2) those that insert |ss|[37] in certain tenses (e.g. _finir_, 'to finish') and (b) those that do not (e.g. _offrir_, 'to offer').

Type (a) finir [f'ĩnir][38]   'to finish'

1. Present Indicative

	Singular	Plural	
First person	finis [fĩnís]	finissons	[fĩnis'ɔ̃ns]
Second person	finis [fĩnís]	finissez	[fĩnis'ets]
Third person	finist [fĩníst]	finissent	[fĩnisə̃nt]

2. Imperfect Indicative

	Singular	Plural	
First person	finissoie [fĩnisójə]	finissions	[fĩnisjɔ̃ns]
Second person	finissoies [fĩnisójəs]	finissiez	[fĩnisj'ets]
Third person	finissoit [fĩnisójt]	finissoient	[fĩnisójə̃nt]

3. Future [39]

	Singular		Plural	
First person	fĩnirai	[fĩnira'j]	finirons	[fĩnir'ɔ̃ns]
Second person	fĩniras	[fĩnir'as]	finirez	[fĩnir'ets]
Third person	fĩnira	[fĩnir'a]	finiront	[fĩnir'ɔ̃nt]

---

36. The thematic vowel is tense |I|. In fact, there is no lax |i| in the vocalic system we set up for Old French.

37. The infinitive marker must be |ss| since it is not voiced in intervocalic position: [fĩnisɔ̃ns] finissons. (Schane 1968:98).

38. The |I| was nasalized but not lowered. Therefore the nasalization Rule (10) must be modified.

10. (a)   V   →   [+nasal]   /   ——— $\begin{bmatrix} C \\ +nasal \end{bmatrix}$

    (b) $\begin{bmatrix} V\ V \\ +nasal \\ =mid \end{bmatrix}$ →   [=high]

39. The rule for thematic laxing (23) must be restricted to [-high] vowels,

4. Conditional

	Singular		Plural	
First person	finiroie	[fĩnir'ojə]	finirions	[fĩnirj'ɔ̃ns]
Second person	finiroies	[fĩnir'ojəs]	finiriez	[fĩnirj'ets]
Third person	finiroit	[fĩnir'ojt]	finiroient	[fĩnir'ojənt]

5. Perfect

	Singular		Plural	
First person	finis	[fĩn'is]	finimes	[fĩn'iməs]
Second person	finis	[fĩn'is]	finistes	[fĩn'istəs]
Third person	finit	[fĩn'it]	finirent	[fĩn'isrə̃nt]

6. Present Subjunctive

	Singular		Plural	
First person	finisse	[fĩn'isə]	finissons	[fĩnis'ɔ̃ns]
Second person	finisses	[fĩn'isəs]	finissiez	[fĩnis'ets]
Third person	finisse	[fĩn'isə]	finissent	[fĩn'isənt]

7. Imperfect Subjunctive

	Singular		Plural	
First person	finisse	[fĩn'isə]	finissons	[fĩnis'ɔ̃ns]
Second person	finisses	[fĩn'isəs]	finissiez	[fĩnisj'ets]
Third person	finist	[fĩn'ist]	finissent	[fĩn'isə̃nt]

The verb endings are no different from those of <u>Class I</u> verbs, except in the subjunctive present, which will be dealt with a little later. The following derivations from the other tenses show that the rules so far formulated are sufficient to account for the data.

1. Present Indicative

<u>finis</u>   [fĩn'is]   'I finish'

$\#|fin + I + ss + i|\#$

$fIn + I + ss + i \#$	(Rule 1)
$fIn + I + ss \#$	(Rule 8)
$fIn + I + s\#$	(Rule 26)
$fIn + I + s\#$	(Rule 10a)

/fĩn'is/

___

because the $|I|$ is not laxed anywhere. Rule for thematic laxing (revised):-

$$\begin{bmatrix} V \\ -high \\ +thematic \end{bmatrix} \longrightarrow [tense] \Big/ \underline{\hspace{3cm}} C$$
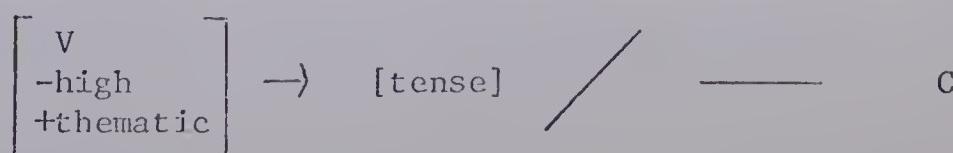
<u>finis</u>   [fĩn'is]   'you (sg.) finish'

\#/fĩn + I + ss + s/\#

  fĩn + 'I + ss + s \#   (Rule 1)

  fĩn + 'I + s + s \#   (Rule 25)

  fĩn + 'I + s \#   (Rule 26) [40]

  fĩn + I + s \#   (Rule 10a)

  /fĩn'is/

<u>finissez</u> [fĩnis'ets]   'you (plural) finish'

\#|fĩn + I + ss + Ets | \#

  fĩn + I + ss + 'Ets \#   (Rule 1)

  fĩn + I + s + 'Ets \#   (Rule 25)

  fĩn + I + s + 'Ets \#   (Rule 10a)

  /fĩnis'ets/

2. Imperfect Indicative

<u>finissoient</u>   [fĩnis'ojə̃nt] 'they were finishing'

\#|fĩn + I + ss + Ea + ont|\#

  fĩn + I + ss + 'Ea + ont \#   (Rule 1)

  fĩn + I + ss + 'ea + ont \#   (Rule 13)

  fĩn + I + ss + 'eja + ont \#   (Rule 5)

  fĩn + I + ss + 'oja + ont \#

  fĩn + I + ss + 'oj + ont \#   (Rule 111)

  fĩn + I + ss + 'oj + ə̃nt \#   (Rule 10)

  fĩn + I + ss + 'oj + ə̃nt \#   (Rule 9)

  fĩn + I + s + 'oj + ə̃nt \#   (Rule 26)

  /fĩnis'ojə̃nt/

3. Future

<u>finirons</u> [fĩnir'ɔ̃ons]   'we shall finish'

\#|fĩn + I + rA + Oms | \#

  fĩn + I + rA + 'Oms \#   (Rule 1)

  fĩn + I + r + 'oms \#   (Rule 11)

  fĩn + I + r + 'ɔ̃ms \#   (Rule 10)

  fĩn + I + r + 'ɔ̃ns \#   (Rule 21)

  /fĩnir'ɔ̃ns/

---

40. This assumes that the Rule can apply more than once. Since we have

finira [fĩnir'a]   'he will finish'

#/fIn + I + rA + t/ #

   fIn + I + rA + t #   (Rule 1)

   fIn + I + rA   #   (Rule 12)

   fIn + I + rA   #   (Rule 10a)

   /fĩnir'a/

4. Conditional

finiriez [fĩnirj'ets]   'you (plural) will have finished'

#/fIn + I + r + Ea + Ets /#

   fIn + I + r + Ea + 'Ets   (Rule 1)

   fIn + I + r + ea + 'Ets   (Rule 13)

   fIn + I + r + e + 'Ets   (Rule 11)

   fIn + I + r + j + 'Ets   (Rule 14)

   fĩn + I + r + j + 'Ets   (Rule 10a)

   /fĩnirj'ets]

5. Perfect[41]

finimes [fĩnimə̃s]   'we finished'

fIn + I + s + Oms

   fIn + I + s + mOs #   (Rule 22(i))

   fIn + I + s + m s #   (Rule 22(ii)

   fIn + 'I + s + m s #   (Rule 1)

   fIn + 'I + s + mə̃s #   (Rule 9)

   fIn + I +   mə̃s #   (Rule 20)

   fĩn + I +   mə̃s #   (Rule 10a)

   /fĩn'im s/

---

not established a phonological cycle, it is simpler to expand Rule (26) so it will handle the conflation of more than two similar forms.

Rule (26) (revised):

$$[\alpha F] \quad [\alpha F] \quad ([\alpha F]) \quad \rightarrow \quad [\alpha F]$$

41. The |ss| infix is absent, and must be marked in the lexicon for its absence in the perfect and imperfect subjunctive, i.e. the "past aspect".

<u>finirent</u>   [finirɔ̃nt]   'they finished'

#|fIn + I + s + ont|#

   fIn + 'I + s + õnt #   (Rule 1)
   fIn + 'I + s + ɔ̃nt #   (Rule 10)

   fIn + 'I + r + ɔ̃nt #   (Rule 24)
   fIn + 'I + r + õnt #   (Rule 9)
   /fĩnirɔnt/

6.   Present Subjunctive

In <u>Class I</u> verbs the thematic vowel is absent in the present subjunctive, and there is no subjunctive marker. The thematic vowel is retained in <u>Class II</u> verbs, and there is indication of a subjunctive marker in the singular of the present. It appears phonetically as a schwa, so it must be a non-high lax vowel. We consider lax |ɛ| to be the most likely source because there are occurrences of the form <u>finissiez</u> in Old French, (Pope 1934:342), and |ɛ| is the only non-high vowel which converts to /j/ before a stressed vowel. The subjunctive marker must, however, be marked for its absence in the first and second plural forms here.

<u>Derivations</u>

     <u>finisse</u>   [fin'is]   'that I finish'

   #|fIn + I + ss + ɛ + i|#
     fIn + 'I + ss + ɛ + i #   (Rule 1)
     fIn + 'I + ss + ɛ   #   (Rule 8)
     fIn + 'I + ss + ə   #   (Rule 9)
     fIn + 'I + s + ə   (Rule 26)
     fĩn + 'I + s + ə   #   (Rule 10a)
     /fĩn'isə/

finisse [fĩnisə]   'that he finish'

#|fIn + I + ss + ɛ + t|#

fIn + 'I + ss + ɛ + t #	(Rule 1)
fIn + 'I + ss + ə + t #	(Rule 9)
fIn + 'I + ss + ə #	(Rule 12)
fIn + 'I + s + ə #	(Rule 26)
fĩn + 'I + s + ə #	(Rule 10a)

/fĩnisə/

finissent [fĩnisõnt]   'that they finish'

#/fIn + I + ss + ɛ + ont / #

fIn + 'I + ss + ɛ + ont #	(Rule 1)
fIn + 'I + ss + ə + ont #	(Rule 9)
fIn + 'I + ss + ont #	(Rule 11)
fĩn + 'I + ss + ~nt #	(Rule 10)
fĩn + 'I + s + õnt #	(Rule 26)

/fĩn'isõnt/

7. Imperfect Subjunctive:

Although phonetically the forms are quite similar to those of the present subjunctive (except in third person singular, and second person plural) the underlying representations are different. The |ss| infix is absent instead we have |s| + |sɛ|, the past aspect marker and the imperfect subjunctive marker.

Derivations:

finisse [fĩn'isə]   (first person singular)

#|fIn + I + s + sɛ + i|#

fIn + 'I + s + sɛ + i #	(Rule 1)
fIn + 'I + s + sɛ #	(Rule 8)
fIn + 'I + s + sə #	(Rule 9)
fIn + 'I + sə #	(Rule 26)
fĩn + 'I + sə #	(Rule 10a)

/fĩnisə/

finist [fĩn'ist] (third person singular)

#|fIn + I + s + sɛ + t|#

   fIn + 'I + s + sɛ + t #   (Rule 1)

   fIn + 'I + s + sə + t #   (Rule 9)

   fIn + 'I + s + s + t #   (Rule 15)

   fIn + 'I + s +   t #   (Rule 26)

   fIn + 'I + s +   t #   (Rule 10a)

   /fĩn'ist/

finissiez [fĩnisj'ets] (second person plural)

#|fIn + I + s + sɛ + Ets|#

   fIn + I + s + sɛ + 'Ets # (Rule 1)

   fIn + I + s + sj + 'Ets # (Rule 14)

   fIn + I +   sj + 'Ets # (Rule 25)

   fĩn + I +   sj + 'Ets # (Rule 10a)

   /finisj'ets/

2.4.1 Class II

Type B – _offrir_ [ofrir][42] 'to offer'

1. Present Indicative [43]

	Singular		Plural	
First person	offre	[ɔ̃frə][44]	offrons	[ɔ̃fr'õns]
Second person	offres	[ɔ̃frəs]	offrez	[ɔ̃fr'ets]
Third person	offre	[ɔ̃frə]	offrent	[ɔ̃frə̃nt]

2. Imperfect Indicative

	Singular		Plural	
First person	offroie	[ɔ̃fr'ojə]	offrions	[ɔ̃frj'õns]
Second person	offroies	[ɔ̃fr'ojəs]	offriez	[ɔ̃frj'ets]
Third person	offroit	[ɔ̃fr'ojt]	offroient	[ɔ̃fr'ojənt]

---

42. We know that the /o/ was an underlying |ɔ|, because there are cases of it alternating with stressed /u / (Pope 927). The phonetic form of the radical is, however, irrelevant here, and we shall simply posit an underlying tense |ɔ|.

43. No thematic vowel is present in this tense.

44. This schwa is a 'voyelle d'appui' (Rule (7)). Rule (7) must follow Rule (8). Otherwise (7) will not apply; (8) would delete the | i | in the first person singular, and we would get *ɔfr.

3. Future

	Singular		Plural	
First person	offrirai	[)frir'aj]	offrirons	[)frir'ɔ̃ns]
Second person	offrirar	[)frir'as]	offrirez	[)frir'ets]
Third person	offrira	[)frir'a]	offriront	[)frir'ɔ̃nt]

4. Conditional

	Singular		Plural	
First person	offriroie	[)frir'ojə]	offririons	[)frirj'ɔ̃ns]
Second person	offriroies	[)frir'ojəs]	offririez	[)frirj'ets]
Third person	offriroit	[)frir'ojt]	offriroient	[)frir'ojə̃nt]

5. Perfect

	Singular		Plural	
First person	offri	[)fr'i]	offrimes	[)fr'iməs]
Second person	offris	[)fr'is]	offristes	[)fr'istəs]
Third person	offrit	[)fr'it]	offrirent	[)fr'irə̃nt]

6. Subjunctive Present [45]

	Singular		Plural	
First person	offre	['ɔfrə]	offrons	[ɔfr'ɔ̃ns]
Second person	offres	['ɔfrəs]	offrons	[ɔfr'ens]
Third person	offre	['ɔfrə]	offrent	[ɔfrə̃nt]

7. Imperfect Subjunctive

	Singular		Plural	
First person	offrisse	[ɔfr'isə]	offrissons	[ɔfris'ɔ̃ns]
Second person	offrisses	[ɔfr'isəs]	offrissiez	[ɔfrisj'ets]
Third person	offrist	[ɔfr'ist]	offrissent	[ɔfr'isə̃nt]

Sample Derivations

1. Present Indicative

offre ['ɔfrə]   'I offer'

|ɔfr + i |

' ɔfr + i #	(Rule 1)
' ɔfr #	(Rule 8)
' ɔfr + ə #	(Rule 7)

/'ɔfr ə/

---

45. The forms are identical to those of the present indicative in the sur-
face representation, but the underlying forms differ in that the schwa
is <u>not</u> a "voyelle d'appui", but the subjunctive marker. (It is absent
in the first and second person plurals again). The thematic vowel is
also absent in this tense.

offre   ['ɔfrə]   'he offers'

#|ɔfr + t |#

'ɔfr + t #   (Rule 1)

'ɔfr + ə + t #   (Rule 7)

'ɔfr + ə   (Rule 12)

/'ɔfrə/

offrez [fr'ets]   'you plural) offer'

#|ɔfr + Ets |#

ɔfr + 'Ets #   (Rule 1)

ɔfrə + 'Ets #   (Rule 7)

ɔfr + 'Ets #   (Rule 11)

/ɔfr'ets/

2. Imperfect Indicative

offroies [ɔfr'ojəs]   'you (sg.) were offering'

#|ɔfr + Ea + s |#

ɔfr + 'Ea + s #   (Rule 1)

ɔfr + 'ea + s #   (Rule 13)

ɔfr + 'eja + s #   (Rule 5)

ɔfr + 'oja + s #   (Rule 4)

ɔfrə + 'oja + s #   (Rule 7))

ɔfr + 'oja + s #   (Rule 11)

ɔfr + 'ojə + s #   (Rule 17)

/ɔfrojəs/

offrions [frj'ɔ̃ns]   'we were offering'

ɔfr + Ea + ɔ́ms

ɔfr + Ea + ɔ́ms #   (Rule 1)

ɔfr + ea + ɔ́ms #   (Rule 13)

ɔfrə + ea + ɔ́ms #   (Rule 7)

ɔfr + e + ɔ́ms #   (Rule 11)

ɔfr + j + ɔ́ms #   (Rule 14)

ɔfr + j + 'ɔ̃ms #   (Rule 10)

ɔfr + j + 'ɔ̃ns #   (Rule 21)

/ɔfrj'ɔ̃ns /

3. Future

offrirai [ɔfrir'a]   'I shall offer'

#|ɔfr + I + rʌ + i | #

  ɔfr + I + r'ʌ + i   #   (Rule 1)
  ɔfrə + I + r'ʌ + i   #   (Rule 7)
  ɔfr + I + r'ʌ + i   #   (Rule 11)
  ɔfr + I + r'ʌ + j   #   (Rule 16)

/ɔfrir'a/

offriront [ɔfrir'ɔ̃nt]   'they will offer'

#|ɔfr + I + rʌ + ont | #

  ɔfr + I + r + Ont   #   (Rule 18)
  ɔfr + I + r + +'Ont #   (Rule 1)
  ɔfrə + I + r + 'Ont #   (Rule 7)
  ɔfrə + I + r + 'ɔ̃nt #   (Rule 10)
  ɔfr + I + r + 'ɔ̃nt   #   (Rule 11)

/ɔfrir'ɔ̃nt/

4. Conditional

offriroient [ɔfrir'ojə̃nt]   'they will have offered'

#|ɔfr + I + r + Ea + ont |#

  ɔfr + I + r + 'Ea + ont # (Rule 1)
  ɔfr + I + r + 'ea + ont # (Rule 13)
  ɔfr + I + r + 'eja + ont # (Rule 5)
  ɔfr + I + r + 'oja + ont # (Rule 4)
  ɔfrə + I + r + 'oja + ont # (Rule 7)
  ɔfr + I + r + 'oj + ont # (Rule 11)
  ɔfr + I + r + 'oj + ɔ̃nt # (Rule 10)
  ɔfr + I + r + 'oj + ɔ̃nt # (Rule 9)

/ɔfrir'ojə̃nt/

5. Perfect

offri [ɔfr'i] 'I offered'[46]

#|ɔfr + I + i |#

  ɔfr + 'I + i #   (Rule 1)
  ɔfrə + 'I + i #   (Rule 7)

---

46. The perfect marker |s| is absent in the first person singular.

ɔfrə + 'I   #   (Rule 8)
ɔfr + 'I   #   (Rule 11)
/ɔfr'i/

offristes [ɔfr'istəs]   'you (plural) offered'
#|ɔfr + I + s + Ets |#
ɔfr + I + s + tEs #   (Rule 22(i))
ɔfr + I + s + tɛs #   (Rule 22(ii))
ɔfr + 'I + s + tɛs #   (Rule 1)
ɔfrə + 'I + s + tɛs #   (Rule 7)
ɔfrə + 'I + s + təs #   (Rule 9)
ɔfr + 'I + s + təs #   (Rule 11)
/ɔfr'istəs/

6. Present Subjunctive

offre ['ɔfrə]   'that I offer'
#|ɔfr + ɛ + i |#
ɔfr + ɛ + i #   (Rule 1)
ɔfrə + ɛ + i #   (Rule 7)
ɔfrə + ɛ   #   (Rule 8)
ɔfrə + ə   #   (Rule 9)
ɔfr + ə   #   (Rule 11 or 26)
/'ɔfrə/

7. Imperfect Subjunctive

offrist [ɔfr'ist]
#|ɔfr + I + s + sɛ + t|#
ɔfr + 'I + s + sɛ + t #   (Rule 1)
ɔfrə + 'I + s + sɛ + t # (Rule 7)
ɔfrə + 'I + s + sə + t # (Rule 9)
ɔfr + 'I + s + sə + t #   (Rule 11)
ɔfr + 'I + s + s + t #   (Rule 15)
ɔfr + 'I + s +   t #   (Rule 26)
/ɔfr'ist/

2.5. CLASS III

Class III verbs can also be divided into types: (1) the /oir/

(devoir) and (2) /re/ (perdre). Neither of these exhibit any alteration

in the person endings, so they will not be discussed in detail. A
few points must be noticed, however.

2.5.1 Type 1

The infinitive <u>devoir</u> [dəv'ojr] 'to owe' terminates in a stressed
/oj/, which is derived from a lax |e|, the thematic vowel. However, in
the underlying representation the thematic vowel must be tense to receive
stress. It is then laxed before a single consonant (/r/) (Rule 23).

The thematic vowel is not present in any of the other forms.
(The perfect and imperfect subjunctive forms are irregular, and will not
be dealt with here.) The underlying stem |dev| contains a lax vowel
which becomes /oj/ when stressed (Rule 4 and 5) (<u>doi</u>, <u>dois</u>); in pre-tonic
position it undergoes pre-tonic adjustment and is converted to schwa
(Rule 2) (<u>devions</u>, <u>deviez</u>).

A rule is needed to account for the loss of the stem final /v/ in
the second and third person singular forms: <u>dois</u> |dev+s| <u>doit</u> |dev+t|.
Rule (28):

$$
\begin{bmatrix} + \text{ cons} \\ + \text{ cont} \\ + \text{ anterior} \end{bmatrix} \rightarrow \phi \Big/ \underline{} \begin{bmatrix} + \text{ cons} \\ - \text{ voc} \end{bmatrix}
$$

i.e. |v| deletes before a consonant.

N.B. This rule does <u>not</u> delete |v| before /r/ (which is [+voc + cons]
in the future and conditional forms: <u>devrons</u>, <u>devroies</u>.

2.5.2 Type 2

The /re/ verbs like <u>perdre</u> 'to lose' have a thematic vowel |i|
in the perfect and past subjunctive: <u>perdis</u> <u>perdisses</u>. There is no
evidence of a thematic vowel in the other tenses. We need a devoicing
rule however to account for the /t/ in the singular forms of the present

indicative /p'ɛrt/, /p'ɛrts/, /p'ɛrt/.

Rule (29):

$$C \rightarrow [-vce] \quad \left\{ \begin{array}{c} \underline{\hspace{2cm}} \# \\ \underline{\hspace{2cm}} \begin{bmatrix} C \\ -vce \end{bmatrix} \end{array} \right\}$$

i.e. a consonant becomes voiceless in word final position, or before a voiceless consonant.

CHAPTER III

PART I

3.0 MODERN FRENCH

3.0.1 The Vocalic System

In his analysis of Modern French Schane employs a seven-vowel system. Each of the vowels may be tense or lax, thus there are fourteen potentially distinctive vowels in the underlying representation justified by Schane. "Except for certain phonetic adjustments of vowels derived from |E| and |ε| underlying tense vowels do not exhibit tonic and pre-tonic variants; phonological alternation is a function of the lax vowels." (Schane 1968:39).

```
Underlying vowel:        I  E  Ɛ  A  Ɔ  O  U    e    ε    a
Derived tonic vowel:     i  ε  ε  a  ɔ  u  y  *wa  *jε   ε   *oe
Derived pretonic vowel:  i  e *ɔ  a  ɔ  u  y    ə    ɔ    ə   *u
```

Schane also posits Lax |i| which only occurs post-tonically, and in this environment is obligatorily deleted; lax |o| which results from the laxing of tense /o/ in noun stems; and an underlying lax /u/ which is required to account for the morphology of the verb. (3rd person plural suffix).

"The derived vowels are all tense phonetically except schwa, which is lax. An asterisk preceding a derived vowel indicates that the derived vowel does not agree in tenseness with the underlying vowel. For such cases the value of the feature tense will have to be switched. Since for the majority of derived vowels the feature "tense" correlates precisely with the tense-ness feature postulated for the corresponding underlying vowel, justification exists for utilizing this feature at the abstract level to distinguish two types of vowels: those which underlie alternating variants and those which do not." (Schane 1968:39)

Front rounded vowels do not appear as underlying vowels and are always derived from the corresponding back vowels. Nasal vowels are

derived from an oral vowel followed by a nasal consonant. Prevocalic glides are derived from high vowels, but the unique post-vocalic glides |j| results from palatalization of an underlying intervocalic |ʎ| the palatalization is due to a following lax |i|.

3.0.2 The Verb

The underlying representations for the person endings and aspect and tense markers as established by Schane (1968:92) are as follows:

Person Endings

First Singular	|s|
Second Singular	|s|
Third Singular	|t|
First Plural	|Oms|
Second Plural	|Ets|
Third Plural	|unt| [47]

Aspect and Tense Markers

Unmarked Aspect

Present	unmarked
Imperfect	|ɛ|
Subjunctive	|ɛ|
Present Participle	|Ant|

Future Aspect

Future	|rA|
Conditional	|rA + ɛ| [48]
Infinitive	|r|

---

47. The third person plural form of the future (dormiront) indicates the presence of a vowel in the underlying representation of the third person plural suffix, which combines with the |A| of the future morpheme |rA| to give |O|. Therefore he established |unt| as the third person plural suffix. (Schane 1968: 81)

48. The conditional marker consists of, |rA| the future marker |ɛ| the imperfect marker. Since the |A| deletes everywhere before the |ɛ|, there is no real evidence that it exists in the underlying representation. Instead the conditional suffix could consist of |r| the infinitive marker |ɛ| the imperfect marker. Schane does

Past Aspect

Preterite	$\lfloor s \rfloor$
Past Subjunctive	$\lfloor ss + \varepsilon \rfloor$

"The singular person endings are represented as single con-
sonants; the plural person endings have vowels as the initial
segment. The tenses belonging to the unmarked aspect also
have vowels as the initial segment except the present tense,
which is unmarked. The three tenses of the future aspect begin
with $|r|$; the two tenses of the past aspect with $|s|$.

The singular person markers are deleted whenever they follow
a central vowel $|a|$ or $|\ |$, so that in derived forms they do not
appear in the present of first conjugation verbs (<u>arrive</u>), all
subjunctive forms (<u>dorme</u>, <u>dormisse</u>), and the third person singular
future forms (<u>dormira</u>). In the first singular future the person
ending $|s|$ becomes /i/ after the tense $|A|$ of the future marker:
$|rA + i \#|$. Subsequently /A + i/ becomes /e/. Analogously, in
the third plural future /rA + unt #/ becomes /rO + nt #/. The
$|A|$ of the future aspect marker is truncated before the vowel of
the first and second plural endings and throughout the conditional
The first and second plural endings undergo metathesis in the
preterite, the only tense where they are preceded by a single
consonant. The preterite $|s|$ is subsequently truncated everywhere
except in the third plural, where it is intervocalic and under-
goes rhotacism. In the past subjunctive the past aspect marker
$|ss|$ is digeminated after rhotacism has taken place." (Schane
1968:92).

"There are two tense markers: imperfect $|\varepsilon|$ and subjunctive $|\varepsilon|$,
and two aspect markers: future $|rA|$ and past $|s|$ (or $|ss|$). The
present tense is unmarked; the imperfect and the present sub-
junctive are unmarked for aspect but marked for tense. $|d rm +$
$\varepsilon + S|\#$ <u>dormais</u> and $|dorm +\quad + S \#|$ <u>dormes</u>. Within the future
aspect, the future tense is marked for (future) aspect but un-
marked for tense: $|d rm + I + rA + S|$ <u>dormiras</u>, whereas the
conditional is marked for both (future) aspect and (imperfect)
tense: $|d rm + I + rA + \varepsilon + S|\#$ <u>dormirais</u>. Within the past
aspect, the preterite is marked for (past) aspect but not tense:
$|dorm + I + s + S|\#$ <u>dormis</u>, whereas the past subjunctive is
marked for both (past aspect and (subjunctive) tense: $|d rm + I$
$+ ss + \varepsilon + S \#|$ <u>dormisses</u>. The past aspect marker has two
variants: $|S|$ for the preterite and $|ss|$ for the past subjunctive.
Within the marked aspects the subjunctive tense marker does not
co-occur with the future aspect marker, and the imperfect tense
marker does not co-occur with the past aspect marker."
(Schane 1968: 123)

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not consider this possibility, but presumably points the future aspect
marker in the underlying representation, because futurity is implied
in the "meaning" or semantics of the conditional. Historically,
however, the periphrastic forms were infinitive + auxiliary verb
<u>avoir</u>, with absence of the <u>av</u> = <u>finir</u> + <u>as</u>, <u>finir</u> + <u>ait</u>, etc.

The following table (Schane 1968:103) summarizes the occurrence of thematic vowels:

I.	-er type (arriver)	$|a|$	$|A|$
II.	-ir type (dormir)	---	$|I|$
	-ir type with -iss (finir)	$|I + ss|$	$|I|$
III.	-oir type (devoir)	___	$|E|$
	-re type (perdre)	___	$|e|$

"There are three verb conjugations, distinguishable by the thematic vowel.......The thematic vowels can be characterized phonologically according to vowel height (all are unrounded): first conjugation $|A|$ is a low vowel; second conjugation $|I|$ a high vowel, and third conjugation $|E|$ or $|e|$ a mid-vowel. Morphological similarities in -oir and -re verbs are attributable to the common feature of a mid thematic vowel; differences are due to the tenseness of the thematic vowel. For regular verbs a thematic vowel appears throughout the future and past aspects. Whenever a non-high thematic vowel ($|e|$, $|E|$, or $|A|$) is followed by a single consonantal segment, it becomes lax: $|ArIv + 'A + r \#|$ → $|ArIv + 'a + r \#|$ → $|ArIv + ' + r \#|$ → /ariv'e/ arriver. In the unmarked aspect only first conjugation and second conjugation verbs in -iss exhibit a thematic vowel. The first conjugation thematic vowel is lax ($|a|$) for these forms ---so that stress can fall on the vowel of the stem in certain present and subjunctive forms: $|ArIv + a + t \#|$ → /ariv(ǝ)/ arrive. Furthermore, it is the thematic vowel which protects the stem final consonant from deletion in the singular, and which accounts for the potential phonetic schwa of these forms." (Schane 1968:124)

3.0.3 Phonological Rules

Following are the ordered[49] rules required in Schane's vowel analysis.

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49. The only rules that Schane lists in order are 2,3,4,5,10,11,12,13, & 14. (Schane 1968:40) The overall ordering here is mine.

The rules are written exactly as Schane gives them. The numbers in parentheses refer to the number of the page on which the rule appears in French Phonology and Morphology, (Schane 1968). The numbers in brackets refer to the corresponding rule in Old French (Chapter II of this paper).

1. Stress Placement (p.62), [1]

   Within the word, place stress on the first vowel in a sequence so that no tense vowel or = juncture follows.[50]

2. Diphthongization (p.40), [5]

   $$\begin{bmatrix} + \text{ stress} \\ - \text{ tense} \\ + \text{ front} \end{bmatrix} \quad \text{segments diphthongize}$$

   (a) /w/ is inserted before |e|.
   (b) /j/ is inserted before |ɛ|

3. Vowel Fronting (p.40), [3]

   (a) $\begin{bmatrix} + \text{ stress} \\ - \text{ tense} \end{bmatrix}$ segments

   (b) [+ high] segments $\Big\}$ become $\begin{bmatrix} + \text{ front} \\ + \text{ tense} \end{bmatrix}$

   This rule changes a, |a| to tense /ɛ/ (aime), | | to tense /oe/ (seul), and b |U| to /y/ (dur).   Part a also applies to /ive/ and /jɛ/, making the vowel segment tense, part b applies vacuously to |I|. This rule follows diphthongization so that diphthongized lax vowels will become tense.

4. Pretonic Adjustment (p.40) [6]

   In pretonic position:

   (a) $\begin{bmatrix} - \text{ tense} \\ \alpha \text{ round} \end{bmatrix}$ segments become [- low]

   (b) $\begin{bmatrix} + \text{ front} \\ + \text{ low} \end{bmatrix}$ segments become [- tense]

   ---

   50.   "In a form such as devient |dɛ   = v n + t #|, the prefix vowel will not receive stress as there is a following = juncture; instead stress will fall on the lax stem vowels." (p.63)

Part (a), converts a pretonic lax [-round] segments, i.e. |e|, to a [+low] segment, i.e. /ε/, and a [+round] segment, i.e. |ɔ|, to a [-low] segment, i.e. |o|. ·Part (b), converts tense |ɛ| to lax /ɛ/. This rule is not ordered with respect to 2 and 3.

5. Rule for Back Vowel Raising (p.41)

$$\begin{bmatrix} - \text{ front} \\ - \text{ low} \end{bmatrix} \quad \text{segments become} \quad \begin{array}{l} + \text{ tense} \\ + \text{ high} \end{array}$$

This rule converts underlying tense |O| and the lax /O/ (derived from lax |ɔ| by pretonic adjustment) to /u/, (prouve, mourons). This rule must follow vowel fronting, i.e. underlying |U| is converted to |y| before |O| can be raised to |u|, and pretonic adjustment, i.e., underlying |ɔ| is raised first to |O|, so that it can subsequently be further raised to /u/.

6. Vowel Nasalization (p.48) [10]

Before nasal consonants: vowels become [+nasal] whenever the consonant is

(a) in word final position.

(b) followed by a consonantal segment.

7. Rule for Nasal Consonant Deletion (p.48)

After nasalized vowels:

Nasal consonants are deleted.

8. Nasal Quality Adjustment (p.49) [10]

[+ nasal] vowels become [+low]

Rules 6, 7 and 8 do not have to be ordered with respect to the preceding rules.

9. <u>Rule for Nasal Centralizing</u> (p.49)

$$\begin{bmatrix} + \text{ nasal} \\ + \text{ tense} \\ + \text{ low} \end{bmatrix} \quad \text{vowels become} \quad [- \text{ front}]$$

$$(\tilde{\bar{\varepsilon}} \quad \longrightarrow \quad \hat{a}\text{:} \quad \underline{\text{prends}})$$

This rule applies vacuously to $|\tilde{A}|$ and $|\tilde{j}|$. It must follow the rules

for nasalization, but precede the vowel shift rules, i.e. 3 and 4.

10. <u>Schwa Conversion</u> (p.41) [2, 17]

$$\begin{bmatrix} - \text{ tense} \\ + \text{ low} \end{bmatrix} \quad \text{segments become} \quad \begin{bmatrix} - \text{ front} \\ - \text{ round} \end{bmatrix}$$

This rule converts all lax low vowels to schwa. It follows (1) fronting,

whcih also makes fronted vowels tense, so that fronted low vowels will

not subsequently become schwa; (2) pretonic adjustment, which lowers

$|e|$ to $/\varepsilon/$, and converts $|\varepsilon|$ to $/\varepsilon/$, so both can subsequently become

schwa; (3) vowel raising, which converts lax $|0|$ to tense $/u/$.

11. <u>Schwa Insertion</u> (p.41) [7]

In morpheme final position:

$/\partial/$ is inserted after a consonant-liquid cluster.

12. <u>Non-Low Vowel Deletion</u> (p.41) [8]

In post-tonic position:

[-low] segments are deleted.

13. <u>Wa-adjustment</u> (p.42) [4]

/we/ become /wa/

14. <u>Closed Syllable Adjustment</u> (p.42)

In a closed syllable:

$$\begin{bmatrix} - \text{ high} \\ + \text{ front} \end{bmatrix} \quad \text{segments become} \quad [+\text{low}]$$

This rule converts $|e|$ to $/\varepsilon/$ in a closed syllable.

The following are additional rules needed for the verb system of Modern French. Schane does not list them in order anywhere, but they are presented here in order of application. (The ordering is mine).

15. Metathesis (p.87) [22]

After a single consonant morpheme, |OmS|, |EtS|:

1. undergo, metathesis of the first two segments.

2. the vowels become [-tense][+low].

This rule must precede stress placements, and nasalization rules.

16. Thematic Laxing (p.95) [23]

Before a single consonantal segment ([+cons]):

a [-high] thematic vowel becomes [-tense].

Rule (16) must precede the vowel fronting rule (3).

(17) Rule for Yod Formation (p.76) [14]

Before a stressed vowel (in the environment + —— +):

$$\begin{bmatrix} + \text{ front} \\ + \text{ low} \end{bmatrix} \qquad \text{vowels become} \quad /j/$$

18. Rule for Truncation (p.68) [11]

At a boundary:

$$\begin{bmatrix} \alpha\text{cons} \\ -\alpha\text{voc} \\ -\text{ stress} \end{bmatrix} \qquad \text{segments are truncated before } [\alpha\text{cons}] \text{ segments.}$$

The truncation rule states that segments which have opposite values for the features "consonantal" and "vocalic", i.e. consonants and vowels, are deleted before a boundary and a segment which agrees in consonantality. Liquids and glides are not truncated, nor are stressed vowels.

19. <u>Rule for Pre-Final Consonant Deletion</u>[51] (p.87) [20]

      Before consonant plus word boundary, (-C#), a consonant, that is [+cons, -voc] segment is deleted.

20. <u>Rule for Final Consonant Deletion (p.13)</u>

      Delete a word final consonant -

(1) obligatorily:-

    (a) in phrase final position.

    (b) in a singular noun.

(2) optionally, in a plural noun.

21. <u>Rule for L-Vocalization (p.80)</u>

      In non-learned forms:

|L| becomes /u/ before a consonant.

This rule converts |AL| to /Au/. All /Au/ (both original and those derived from |AL| are then converted to /O/.

22. <u>Rule for O-conversion (p.80) [18]</u>

      |Au| becomes /O/.

23. <u>Rule for First Singular Vocalization (p.82)</u>

      In word final position:

the first singular marker |S| becomes /i/ when preceded by |A|.

The conversion of |s| to /i/ takes place provided two conditions are met: (1) |S| is the first person singular marker and (2), |S|is preceded by tense |A|. The first condition is imposed so that the second person

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51.   This rule is required in Modern French to delete |t| in /Ets/, (the second person plural suffix), which is not deleted by the truncation rule since there is no intervening juncture between |t| and |s|. Schane shows that the rule is independently motivated however, because it is needed elsewhere in the phonology, to account for forms such as <u>respect</u>: /rɛsp'ɛ/, "respect". "The derivational form <u>respecta-</u> <u>ble</u> /rɛspɛkt'abl(ɔ)/ "respectable", shows that the underlying re- presentation for <u>respect</u> is |rEspEkt#|. The |k| is deleted by the rule for pre-final consonant deletion and the |t| by the rule for final consonant deletion). (Schane 1968:88)

singular |s| will not also be converted to /i/: <u>dormiras</u> |dɔrm + 1 + rʌ + s|#.[52] The second condition assures that the singular |s| is not converted to /i/ in other tenses, where the person marker is not preceded by |ʌ|. If both conditions are met |ʌ + s|# becomes /ʌ + i #/, which is subsequently converted to /e + /.[53]

24. <u>Rule for e-conversion</u>[54] (p.82) [3]

    /ʌi/ becomes /e/.

25. <u>Rule for Singular Person Deletion (p.72) [12]</u>

    In word final position, (in the environment + ——#):

Delete a consonant preceded by a central vowel. This rule applies only

to verbs. Thus, the |s| which is the mark of the plural in adjectives

and nouns, is not deleted after central vowels.

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52. Condition (1) could be dispensed with if |i| were set up as the underlying first singular marker and were converted to |s| everywhere except after |ʌ|. However, Schane (p.94) shows that to account for first conjugation preteritis (e.g. <u>arrivai</u>), the underlying marker has to be |s| which is converted subsequently to /i/.

53. Schane argues that only two features [+cons] and [-voc] have to be switched to convert |s| to /i/, because they share the features [+cont][+diff][-grave][-round] (redundant). He cites evidence from an other Romance Language, Italian, where the change of a continuant consonant to a lax high vowel (or glide) also appears to have taken place. Latin <u>vadis</u>, French <u>vas</u>, Spanish <u>vas</u>, Italian <u>vai</u>, Latin <u>nos</u>, French <u>nous</u>, Spanish <u>nos</u>, Italian <u>noi</u>. (Schane, 1968: 147) It must be noted, however, that if a different set of features are used (Chomsky & Halle, 1968: 177) |s| and /i/ differ in three features: s is [+cons], [+cont], [-round], [+anterior][-voc], and /i/ is [-cons], [+cont], [-round], [-anterior] [+voc]. Since Schane has already posited |s| as the first person singular morpheme, either he can convert it to |i| by a phonological rule or have two person markers in the lexicon.

54. There is historical evidence of /ai/ → /e/ (Darmestetter, 1902:141). Schane supports the conversion of |ʌi| to /e/ by the independently required symmetrical conversion of |ʌu| to /o/. Also, "that the vowel which converts |ʌ| to /e/ is |i| and not some other vowel

26. <u>Rule for Rhotacism (p.85) [24]</u>

   s becomes /r/ when intervocalic.[55]

27. <u>Rule for Degemination (p.90) [25]</u>

   C, C_2 becomes C_1, where $C_1 = C_2$

The rule ordering may be summarized according to Chafe's convention as follows:

Rule Depth	Rule Number	Precedes Rule
VI	15	1, 6, 7, 8
V	1	2,3,4,11,16,17, 18
	6	7, 8, 9
IV	2	3
	9	3, 4
	16	3, 18, 27
	17	18
III	18	19
	3	5
	4	5
II	5	10
	19	20
	21	22
	23	24
	26	27
I	27	-
	20	-
	22	-
	7	-
	8	-
	10	-

receives support from the similicity criterion |i| is the vowel whose feature specifications are most similar to those of a dental sibilant." (Schane, 1968:84)

55. Rhotacism is not a widespread phenomenon in Modern French and is probably restricted to a limited number of morphemes. (Schane 1968: 147)

Rule Depth	Rule Number	Precedes Rules
11	11	–
	12	–
	13	–
	14	–
	24	–
	25	–

PART   II

3.1

A proper historical phonology is the history of the phonological component of the grammars of a language. Phonological change, as it is conceived of in a generative grammar, is change in competence reflected by alterations in the grammar. King, (1969:39) discusses two main types of linguistic change: "primary change (change in the rule component) as distinct from restructuring (change in underlying representations)".

3.1.1 Primary Change:

Changes in the rule component may be effected by: (1) Rule addition, i.e. a new rule is added to the grammar, resulting in sound change. (2) Rule loss i.e. a rule which was present in an earlier grammar ceases to apply, and is absent in a later grammar of the language. (3) Rule re-ordering; i.e. a change in the ordering of certain rules results in a change in the surface phonetic representation. (4) Simplification; diachronic stages of the same language differ in the generality of given rules. Rule loss and rule re-ordering are also a form of simplification when they result in a reduction of allopmorphic variation in certain morphemes at surface level.

3.1.2 Restructuring

Changes in underlying representations may be described as a form of grammar simplification, and occur between generations.

"The parent has a competence, an internalized grammar, underlying his speech output. Though the grammar of the adult cannot undergo a radical transformation, it is susceptible to innovation in the form of rule additions and minor rule changes. The child, developing his grammar from the speech output of his parents and older peers, arrives at a linguistic competence not radically different from that of the adult. The child's competence reflects not only the original grammar of the adult but also those innovations that the adult grammar may have undergone. The child will optimize – simplify – and in the process linguistic change may result." (King 1969:79).

We shall now examine the rules established for Old French (O.F.) and Modern French (M.F.), and see how differences in the two systems can be described in terms of rule addition, rule loss, rule re-ordering, simplification and restructuring.

3.2 RULE ADDITION

(i) M.F. (5) – back vowel raising. This rule raises |o| to /u/, and results in a change in the underlying representations for the third person plural morpheme from |ont| (Old French) to |unt| (Modern French).

(ii) M.F. (7) – nasal consonant deletion. Nasal consonants in Old French were not deleted. There has been no change in the underlying forms, however, only in the phonetic output. e.g. [ỹms] → [ỹ(z)].

(iii) M.F. (14) – which converts |e| to /ε/ in a closed syllable was not operative in Old French. This innovation does not affect the underlying representation which remains |e|.

(iv) M.F. (20) - final consonant deletion, did not exist in the grammar of Old French. Again, there is no change in the underlying representations. This rule can perhaps be considered as a continuation of the process reflected in the devoicing rule O.F. (28) which devoices final consonants in Old French.[56]

(v) M.F. (24) -- the conversion of first person singular marker |S| to /i/ was not needed in Old French since |S| was nowhere the first person singular marker. Thus this rule is an innovation necessitated by a change in the underlying representation.

3.3. RULE LOSS

The following rules were lost in the transition from Old French to Modern French.

(i) O.F. (15) - which deletes |a| in the environment /V ——— + t /, is absent in Modern French, where the |t| is deleted in all third person singular forms by M.F. (25) which deletes the singular person marker when preceded by a central vowel. The rule was therefore lost because the forms to which it previously applied were eliminated by the generalization of O.F. (12) to M.F. (25) (see below, p. 96).

(ii) O.F. (16) - which converted |i| to /j/ after a stressed vowel was replaced in Modern French by a rule which derives all post-vocalic /j/ from a palatalized |ľ|. (Schane 1968:5a)

(iii) O.F. (13) - which laxes tense |E| is not present in Modern French, because the imperfect marker is |ɛ| instead of |Ea| as in Old French. The M.F. |ɛ| remains tense throughout the paradigm (except in the first and second person plural), whereas the |Ea| of Old French became lax and

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56. James Foley (1970:11) proposes establishing strength of articulation
     hierarchies to describe the lenition process involved in the Germanic

diphthongized. The loss of O.F. (13) results from restructuring.

3.4 RULE RE-ORDERING

There are no changes in the rule component of Modern French which may be described as a re-ordering of any rules in Old French. It must be noted, however, that the ordering paradox of Old French has been lost as a result of the simplification of rules: O.F. (11) which deletes $|a|$ / = V, has been generalized in M.F. (18) which truncates any unstressed vowel before another vowel. O.F. (8) for high consonant deletion in post-tonic position continues to operate in Modern French as M.F. 911). A reversal in rule order was proposed for Old French to account for alternating forms of the first person singular morpheme, (see page 48).

3.5 SIMPLIFICATION

A majority of the differences between the two stages – Old French and Modern French – can be described as changes in simplification or as modifications of certain analogous rules.

(i) The glide insertion rule O.F. (5) has been considerably simplified in Modern French.

<u>O.F. (5)</u>

$$\phi \rightarrow \begin{bmatrix} - \text{voc} \\ - \text{cons} \\ \alpha \text{ round} \end{bmatrix} / = \left\{ \begin{array}{l} \text{(a)} \quad \underline{\quad} \quad \begin{bmatrix} V \\ +\text{mid} \\ -\text{high} \\ \alpha\text{round} \\ +\text{tonic} \end{bmatrix} \\ \text{(b)} \quad \begin{bmatrix} V \\ +\text{mid} \\ +\text{high} \\ \text{round} \\ +\text{tonic} \end{bmatrix} \end{array} \right\}$$
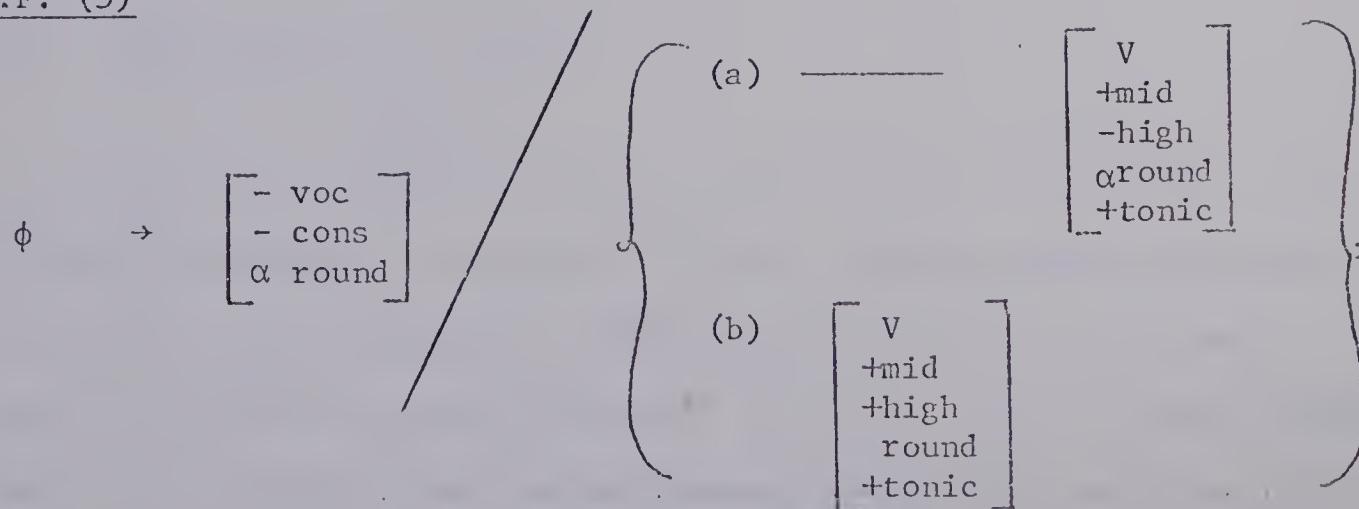
consonant shift. A similar hierarchy seems evident in the historical account of final consonants in French: voiced obstruents became, voiceless, voiceless stops became continuants, and were then deleted.

i.e.   insert /j/ before stressed $|\varepsilon|$, and

after stressed $|e|$

insert /w/ before stressed $|ɔ|$, and

after stressed $|o|$

M.F. (2)

$$\phi \rightarrow \begin{bmatrix} - \text{voc} \\ \alpha \text{ round} \end{bmatrix} \Big/ \underline{\hspace{2cm}} \begin{bmatrix} V \\ + \text{stress} \\ - \text{tense} \\ + \text{front} \\ \alpha \text{ high} \\ + \text{mid} \end{bmatrix}$$
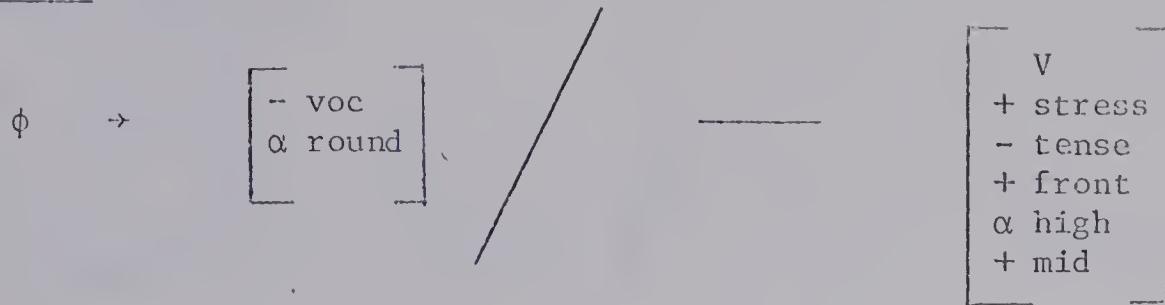
i.e.   insert /w/ before $|e|$.

insert /j/ before $|\varepsilon|$.

Note that fewer features are required in M.F. 92), but it also applies
to fewer forms. Actually O.F. (5) is two rules that have been conflated.
However, the change cannot be expressed as a loss of either rule,
but why as a modification of both.

 (ii) O.F. (3) has been simplified in the sense that now all stressed
$|a|$ are converted to /ɛ/ directly, and there is no intervening /aj/. The
M.F. rule for vowel fronting (M.F. 3) does a lot more than convert $|a|$
to /ɛ/. It has been expanded to account for the conversion of back vowels
to front rounded vowels as well.

(iii) O.F. (4) does two things.

1. e → o / ___ j
2. ɔ → / w ___

In Modern French only a /we/→ /wa/ rule M.F. (13) is needed because the
$|ɔ|$ becomes /ö/ by the vowel fronting rule M.F. (3). Historically,
there is evidence of this development: ɔ > uɔ > ue > ö (Pope 1934:668).
There is also evidence for the development of $|ej|$ to /wa/: ej > oj >
we> wa (Pope 1934:663). Thus, as the rules for the intervening stages

were lost, only two rules: M.F. (2) |e| → /we/ and M.F. (13) /we/ → /wa/ remain.

(iv) O.F. (12) deletes |t| after a low central vowel. In Modern French this rule has been generalized so that it applies to all singular person markers. (M.F. 25).

(v) O.F. (14)

$$\begin{bmatrix} V \\ +\text{ front} \\ +\text{ mid} \end{bmatrix} \rightarrow [-voc] \Big/ \underline{\qquad} \begin{matrix} V \\ +\text{ stress} \end{matrix}$$

i.e. |e| + |ɛ| → j before a stressed vowel.

M.F. (17)

$$\begin{bmatrix} V \\ +\text{ front} \\ +\text{ low} \end{bmatrix} \rightarrow [-voc] \Big/ \underline{\qquad} \begin{bmatrix} V \\ +\text{ stress} \end{bmatrix}$$

i.e. |ɛ| → /j/ before a stressed vowel.

Although the number of features remain the same, the rule has become general because it now applies only to |ɛ| whereas in Old French it applied to both |ɛ| and |e|.

(vi) In Old French there are two rules for pretonic schwa conversion:

O.F. Rule (2)   - |ɛ , e| →   /ə/
O.F. Rule (17) - |a| →   /ə/.

      In Modern French |e| →   /ɛ/ in pre-tonic position, which is part of a more general rule (M.F. 4), and there is only one rule for schwa conversion.

$$\begin{bmatrix} V \\ -\text{ tense} \\ +\text{ low} \end{bmatrix} \longrightarrow \begin{bmatrix} -\text{ front} \\ -\text{ round} \end{bmatrix} \text{[57]}$$

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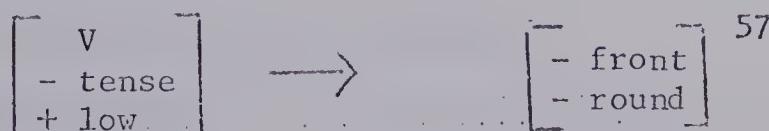
57.   This form of the rule reflects the different features used to represent Old French and Modern French. Schane uses [low], grouping /ɛ/, /a/ and /ɔ/ as [+low]. For Old French we posited the feature [mid]. Therefore /ɛ/, /a/ and /ɔ/ must be grouped as [-high].

This also includes O.F. (9) which converts non-high vowels to schwa in post-tonic position.

(vii) O.F. (18)

$$|A + o| \quad \rightarrow \quad /o/$$

M.F. (22)

$$|A + u| \quad \rightarrow \quad /o/$$

There is no change in the rule: only the underlying representation has been changed by the addition of M.F. (5) which converts $|o|$ to /u/.

(viii) O.F. (20)

$$|s| \quad \rightarrow \quad \phi \quad / \quad \text{------} \quad \left\{ \begin{array}{l} C \# \\ [+ \text{ nasal}] \end{array} \right\}$$

In Modern French this has been generalized so that (a) all consonants delete in pre-final position:

M.F. (19)

$$C \quad \rightarrow \quad \phi \quad / \quad \text{------} \ C \#$$

and (b) it has become part of a more general truncation rule:

M.F. (18)

$$\begin{bmatrix} \alpha \text{ cons} \\ - \alpha \text{voc} \\ - \text{ stress} \end{bmatrix} \quad \rightarrow \quad \phi \quad / \quad \text{------} + [\alpha \text{cons}]$$

Note that this rule also covers the $|a| \rightarrow \phi$ / — V, Rule (O.F. 11).

3.6 RESTRUCTURING

The following morphemes have been changed in their underlying representations:

(i) Third person plural morpheme:

O.F. $|ont|$ $\rightarrow$ M.F. $|unt|$

|ont| was justified in Old French by its occurrence in the third person

plural of the future. This form is accounted for by Schane in M.F. (22)

|A + u| → /o/ (See above page 88).

(ii) Imperfect Marker:

     O.F. |Ea| →   M.F. |ε|.

There is historical evidence that stressed |e| developed to /ε/ in the

imperfect: e > ei > oi > ue > e (Pope 1934:663). Since the

alternation e ∼ wa (<we) exists in Modern French (M.F. 2, 13), the

stressed imperfect vowel, which does not diphthongize, is analyzed as

identical to other non-alternating low mid front vowels, namely

The restructuring results from a rule which entered French after the

period described in Chapter II, and was lost prior to Modern French.

This rule deleted the /w// from /w/ (in the imperfect tense) (Pope

1934:917).

(iii) Conditional Marker:

     O.F. |r + Ea| →   M.F. |rA + ε|

As discussed earlier, (see above page 81), we do not feel that Schane

is justified in positing the future marker |rA| as part of the |A| is

deleted everywhere before the |ε|. The conditional morpheme could as

well be analysed as |r| (infinitive marker) + the imperfect marker,

so the underlying representation would be the same as in Old French.

(For restructuring of the imperfect marker see above).

(iv) Thematic Vowel:

     Schane posits a lax |e| as the thematic vowel for perdre

to prevent truncation of stem final |d| in infinitive and future forms.

The |e| is then raised to |I| in past aspect forms. In O.F. the

truncation rule did not apply, therefore, perdre was analyzed as being

athematic except in the past aspect where it has |I|, as its thematic

vowel.

(v) First person singular marker

    O.F. |i| ⟶   M.F. |s|

This change is the only form that cannot be satisfactorily accounted for

in the terms established so far.

Traditionally the use of |s| as a person marker has been called

an example of 'analogy'. The use of |ts| and |s| as first person singular

marker first appeared in the 12th century. These forms were modeled

at first on stems faz [fats], which ended in an orthographic "z". (Guaz,

Rol. 515), but the group of verbs whose stems ended in |s| in the first

person (puis, creis, conois finis, etc.) also served as a model. (Rose

I, tiens, viens, atens, sins etc.).

> "When, in the 13th century, [ts] became [s], the use of the
> s-forms gained ground, their vogue being increased by the
> relative isolation of the flexionless forms."
>
> "The growing dislike of hiatus increased the vogue of the
> forms in -s, and in Middle French it began to be adopted in other
> tenses also: (i) in the first person of the perfects in -i
> and -u (senti-s , valu - s, du - s) where its introduction was
> facilitated by the forms of the s-perfects (fis, mis, pris, etc.)
> (ii) in the first person singular of the imperfect indicative,
> e.g. duroi(e)s, sentoi(e)s; (iii) in soi(e)s, the first person
> singular of the present subjunctive of estre." (Pope 1934:899).

In the sixteenth century there was a tendency to view |s| as the

flexion proper to the second person only, but by the seventeenth century

the |s| was well established as first person marker though it was soon

lost in the pronunciation.

In generative linguistics, analogy is considered to be another

form of simplification, where a certain form is generalized and extended

to other items in the lexicon. The introduction of the |s| morpheme for

the first person singular cannot be described in these terms, however,

because there were no occurrences of the |s|as a first person singular

marker in Old French. Thus there is no form to provide a model for

analogy. In the perfect forms (fis, mis, pris, etc.) the [s| was the

perfect marker, but it came to be considered as a first person marker.

This change in morphological value is difficult to describe in generative

terms, except to label it as a form of restructuring which is uninforma-

tive.

Before proceeding to a comparison of Old French and Latin phono-

logical rule components, it is interesting to note at what level, or

depth, primary change occurs.

Chafe (1968:129) suggests that "phonological change normally

takes place through the addition of a new rule to Depth I". If there

is interference between the newly added rule and some rule already at

Depth I, the older rule is generally pushed back into a greater depth.

In some cases, the interference is such that the new rule must precede

a rule already at Depth I. The new rule is then immediately forced

into Depth II, and appears to have entered the language at that depth.

This hypothesis seems valid when applied to the rules added

to the phonological component of Old French to produce Modern French.

Rules M.F. (7, 14, 20, and 24) all enter the language at Depth I. M.F.

(5), however, moves immediately into Depth II, so that the nasalization

rule (M.F. 10) can apply to its output.

Over a period of time phonological rules gradually increase their

depth, and are eventually lost.

> "Loss of a rule is not directly dependent on its degree of
> depth, however, but probably rather on something which
> can be roughly referred to as the amount of work it does in the
> language. More specifically, the susceptibility of a rule
> to loss would seem to be correlated with the amount of variation
> in phonetic symbolization (the amount of 'morphophonemic alter-
> nation') which that rule accounts for." (Chafe 1968: 130)

Of the rules that were lost from Old French, O.F. (13) belongs to Depth III, and O.F. (15) to Depth II. The latter was replaced at the same depth by M.F. (25) which was more general. (see above p. 89). O.F. (13) was lost as a result of restructuring.

The repercussions of rule addition, loss and simplification on the ordering would require a detailed examination of grammars intermediate between Old French and Modern French, and as such lie outside the limits of this investigation. There is no doubt, however, that many of the older rules were pushed back into deeper levels, while others were incorporated into newer, more general rules.

PART III

3.7 LATIN TO OLD FRENCH

3.7.1 Rule Loss

A great number of the rules in the phonological component of Latin are absent in Old French.

(i) The environment for vowel shortening L. (1) no longer existed in Old French. Rule additions outside the verb system interfered with it subtractively and destroyed its environment. Length was no longer distinctive in the vocalic system of Old French. Note that this rule had already been forced into Depth IV in Latin.

(ii) The u-epenthesis rule (L. 3) was lost as a result of the restructuring of the underlying representation for the third person plural suffix: L. $|nt|$ $\longrightarrow$ O.F. $|ont|$. L. (3) was also lost from Depth IV.

(iii) L. (5) converts $|e + u| \longrightarrow /\bar{u}/$. In the verb system this rule was required only to account for the perfect forms where $|u|$ was the stem formative (e.g. $|mon + e + u =| \longrightarrow /mon + tu = /$). The perfect stem formative does not survive into Old French, therefore the rule is

no longer needed. It is ordered at Depth I in Latin but it was extremely limited in applications.

(iv) L. (8) introduced epenthetic /e/ before ÷S + C, and /i/ before =S. The latter part of the rule was lost because its environment was destroyed as a result of restructuring of the verb system. ε - epenthesis may survive in Old French estre forms in the present indicative. (Pope 1934:951):

	Singular	Plural
First person	sui	somes, esmes
Second person	es	estes
Third person	est	sont

The forms of estre were not dealt with in our analysis, therefore, the rule is absent from our list of rules for Old French.[58] The rule had already reached Depth III.

(v) L. (9) in Latin deleted |b| after |s|. The only place where |s ÷ b| ever occurred was in the underlying representations of the future and imperfect forms of esse, |s + bi + m|, |s + bā + m| , where |b| was part of the future morpheme |bi | or the imperfect morpheme |ba|. Both these were lost through restructuring, so the rule is absent from Old French.

(vi) Lachmann's law (L. 13) which lengthened a vowel before a consonant cluster when the first consonant was voiced, is lost in Old French. There is no evidence for a vowel lengthening rule which involves clusters. However, there is a rule:

$$V \longrightarrow [+long] \Big/ \underline{\qquad} \begin{bmatrix} +cons \\ +cont \\ +vce \end{bmatrix}$$

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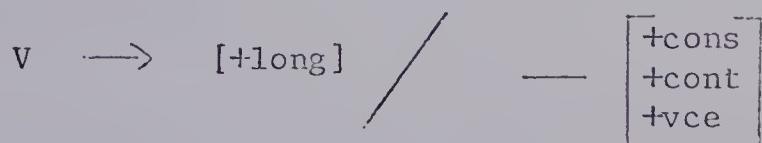
58. The e-epenthesis rule applied to a great many forms outside the verb system: "The initial on-glide, developed in late Latin before the group s ÷ consonant, remained movable after a vowel throughout Period I (c.f. Al, ta spuse), but with the twelfth century it became a

which applies to Modern French (Schane 1968, 54), and to Old French.[59]

(vii) L. (6) which converts $|u|$ ⟶ /w/ is not present in our list of rules for Old French, because there is no evidence in our data for its existence. However, it did exist in the 12th and 13th centuries when the shift of stress in $|{}'uc|$ to $|u'e|$ resulted in the consonatalization of $|u|$ to give /we/. (Pope 1934:195).

(viii) L. (4) deleted $|i|$ before another vowel, but it was restricted to forms of <u>regere</u> and the future morpheme $|bi|$. Both these were lost as a result of radical changes in the underlying structure of the verb system. Thus the rule is unnecessary in Old French.

It is interesting to note that the rules that were lost were generally <u>ad hoc</u>, especially the ones lost from Depth I, i.e. L. (4, 5, 6). These applied to only a few forms and were thus susceptible to loss.

3.7.2 Simplification

The following Latin rules appear in Old French in a modified version, which may be the result of simplification or complication.

(i) L. (10) – rhotacism – has become less general in Old French (O.F. 25). It has been restricted to the perfect marker $|s|$. On the other hand, the second part of L. (10) – vowel lowering – no longer applies and has been lost.

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fixed integral part of the word (c.f. Rol., <u>s'espee</u>, <u>l'estandart)</u> (Pope 1934: 603).

59. This rule was not needed to account for the specific data examined in the analysis.

(ii) The rule for vowel reduction[60] (L. 11) has been simplified through loss of feature [+long].

L. (11)

$$\begin{bmatrix} V \\ \alpha F \end{bmatrix} \quad \begin{bmatrix} V \\ \alpha F \end{bmatrix} \quad \rightarrow \quad \begin{bmatrix} V \\ \alpha F \\ +long \end{bmatrix}$$

O.F. 26

$$[\alpha F] \quad [\alpha F] \quad ([\alpha F]) \quad \rightarrow \quad [\alpha F]$$
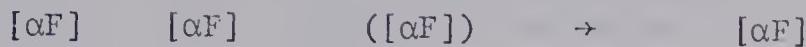
3.7.3 Rule Addition

A majority of the rules in Old French phonology represent innovations.

(i) M.F. (1) — stress placement. In Latin a stress rule was not necessary to account for the data under consideration because vowels did not undergo any alternation when stressed.[61]

(ii) O.F. (2) — pre-tonic schwa conversion

(iii) O.F. (3) — $|a| \rightarrow /\varepsilon/$ when stressed

(iv) O.F. (4) — $|e| \rightarrow /o/$ when followed by $/j/$
$\quad\quad\quad\quad | \ | \rightarrow /\varepsilon/$ when preceded by $/w/$

(v) O.F. (5) — glide insertion

(vi) O.F. (6) — closed syllable adjustment

(vii) O.F. (7) — schwa insertion

(viii) O.F. (8) — high vowel deletion

(ix) O.F. (9) — non-high vowel schwa conversion

(x) O.F. (10) — nasalization

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60. The Latin rule was formulated to apply to vowels only, whereas the French rule applies to all segments. However the restricting on L. (11) was occasioned by the data being analyzed. It may well be that geminate consonants in Latin are best characterized as single [+long] segments rather than as two identical segments. However this problem is beyond the scope of this thesis.

61. The Latin stress rule (which placed stress usually on penultimate or anti-penultimate syllable) was replaced by O.F. (1). — stress the leftmost vowel so that no tense vowel or = juncture follows.

(xi)   O.F. (12) – $|t|$ deletes after $|a|$ or $/\partial/$.

(xii) O.F. (13) – $|E|$ → [-tense] / ___ V

(xiii) O.F. (14) – $|E,\varepsilon|$ → /j/ / ___ $\begin{bmatrix} V \\ +stress \end{bmatrix}$

(xiv) O.F. (15) – $|a|$ → ϕ / + V ___ t#

(xv)   O.F. (16) – $|i|$ → $|j|$ / $\begin{bmatrix} V \\ +stress \end{bmatrix}$ ___

(xvi) O.F. (17) – $|a|$ → $/\partial/$ in pretonic position

(xvii) O.F. (18) – $|A + o|$ → /o/

(xviii) O.F. (19) – thematic vowel tensing

(xix) O.F. (20) – $|s|$ deletion

(xx)   O.F. (21) – nasal assimilation

(xxi) O.F. (22) – (i) metathesis (ii) vowel lowering and laxing

(xxii) O.F. (23) – Thematic vowel laxing

None of these rules would have interfered with the Latin rules when they entered the grammar. They had moved into varying degrees of depth at the time of the grammar of Old French that we examined in Chapter II.

The addition of such a large number of rules, which are only the ones specifically needed for the verb system and only a portion of the total number of rules added to the grammar of Latin would lead one to expect a certain amount of restructuring in some later period.

3.7.4. Restructuring

There is a considerable change in the underlying representations for the verb system between Latin and Old French.

(i) Person markers:

First person singular   L. $|o,m|$ ⟶ O.F. $|i|$

The o was lost as a result of regular phonological rule addition O.F. 8, which deletes high post-tonic vowels; and another which deleted

final |m|. The |i| of O.F. was not overtly realized except in the
perfect and future indicative, where it combined with a preceding |A|
and became /aj/.

    First person plural   L. |mus| →   O.F. |Oms|

The source of O.F. Oms is generally considered to be sumus (Pope 1934:893).

    Second person plural   L. |tis| →   O.F. |Ets|

The source is considered to be atis >*ats > ets (through loss of post-
tonic /i/ (O.F.8)).

    Third person plural   L. |nt| →   O.F. |ont|

The u-epenthesis rule L. (3) has been lost, as a result of restructuring.

(ii) Tense markers:

    Imperfect   L. |ba||eba| →   O.F. |Ea|

The |eba| form provides the source for |Ea|; the intervocalic |b| was
lost through a general lenition rule which itself was lost by the time of
Old French.

    Future   L. |bi| →   O.F. |rA|

Here there has been a complete restructuring. The |bi| was lost through
lenition and unstressed vowel deletion. The future in O.F. was derived
from a combination of the infinitive and auxiliary (avoir) by the
application of phonological rules.

    Subjunctive   L. |e| |a| →   O.F. |ε|

L. |e, a| simplified in O.F. to a single morpheme |ε| .

    The four conjugations of Latin have been reduced to three in Old
French. Whereas Latin had four thematic vowels: |a|, |e|, |i|, |i|, Old
French has only three: |a|, |I|, |E|.

    The number of tense markers co-occurring with the verb stem was re-
duced. Instead new constructions were formed in which the tense markers

was transferred to the auxiliary verb.

CONCLUSION

When we consider the three synchronic analyses of Latin, Old French and Modern French, it becomes clear that there has been a great disruption between Latin and Old French, both in the rule component, and in the underlying representations. In contrast, there is a reasonably coherent transition from Old French to Modern French, involving primarily the generalization of certain rules. The period of time separating the three stages was about the same, so this marked contrast in degree of change is puzzling. Further research into the intervening stages between the three is indicated.

Synchronic grammars, not unnaturally, often recapitulate historical events, and the phonological rule components of both Old French and Modern French reflect previous phonological changes. No evidence has been found to contradict Chafe's theory of rule ordering. We suggest that it may prove fruitful to apply his hypothesis to intervening stages between Latin and Modern French and to investigate the effect of rule additions on the ordering of rules already in the grammar.

In terms of the model, we have made two significant findings:

(1) The possible existence of an ordering paradox in Old French should encourage further research into the whole question of rule ordering in a grammar.

(2) There is no way to account for the introduction of $|s|$ as the first person singular marker in Modern French. It seems to us that the generative model is clearly inadequate on this point.

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